

# Convertible Tops and Sun Roof Panel

GROUP  
**45**

PART	PAGE	PART	PAGE
45-01	45-01-01	45-03	45-03-01
General Top and Sun Roof Service .....	45-01-01	Sun Roof Panel .....	45-03-01
<b>PART 45-02</b>			
Convertible Tops .....	45-02-01		

## PART 45-01 General Top and Sun Roof Service

Refer to the Wiring and Vacuum Diagrams Manual Form 7795P-70 for electrical schematic wiring diagrams,

vacuum schematic diagrams and the locations of wiring and vacuum harnesses and lines.

Refer to the Car Diagnosis Manual, Form FD7962 for diagnosis procedures.

## PART 45-02 Convertible Tops

COMPONENT INDEX Applies Only to Models Indicated	All Models	Ford	Mercury	Meteor	Cougar	Fairlane	Mustang
BACK CURTAIN REPLACEMENT		02-07	02-07	02-07	02-15	02-11	02-15
BLEEDING THE SYSTEM	02-03						
CARE OF TOP FABRIC	02-03						
CONTROL SWITCH TEST	02-02						
CURRENT DRAW TEST	02-02						
CYLINDER REPLACEMENT	02-04						
DUST HOOD REPLACEMENT	02-03						
FABRIC TOP AND TRIM REPLACEMENT		02-10	02-10	02-10	02-16	02-12	02-16
FLUID LEVEL TEST	02-02						
HOLD-DOWN CLAMP REPLACEMENT		02-07	02-07	02-07	02-15	02-11	02-15
MECHANICAL TEST CHECKS	02-02						
MOTOR AND PUMP	02-03						
Removal and Installation	02-03						
Overhaul	02-01						
OPERATION OF TOP		02-04	02-04	02-04	02-04	02-05	02-04
TOP ADJUSTMENTS		02-10	02-10	02-10	02-20	02-14	02-20
WEATHERSTRIPPING REPLACEMENT							

A page number indicates that the item is for the vehicle(s) listed at the head of the column.

## 1 OPERATION, TESTING, AND CARE OF CONVERTIBLE TOP—ALL CONVERTIBLES

### OPERATION OF THE TOP

#### TO LOWER THE TOP

With the vehicle standing still, proceed as follows:

1. Make certain that the folding top stowage compartment area is not restricted as a result of objects stowed in the stowage compartment.

2. Rotate the right and left sunvisors downward.

3. Disengage the right and left header clamps. To avoid cutting the top material or creating difficult boot installation, always close the handles

after releasing the No. 1 bow from the windshield header.

4. Actuate the folding top control switch located on the instrument panel until the top is in the fully stowed position.

5. Remove the dust hood (boot) from its protective case in the luggage compartment. Position the boot over the folded top and engage the snap fastener and the integral retainer.

Under no circumstances, should the folding top be operated while any of the following conditions prevail:

While the vehicle is in motion.

With the dust hood (boot) partially

installed across the rear seat back and stowed in the folding top stowage compartment.

With objects in the folding compartment.

With the back curtain window unzipped and hanging by the assist strap.

With the back curtain window unzipped and resting on the rear seat back.

While the top material is wet.

The above practices can result in damage to the top material and/or mechanism, broken back curtain window glass and/or folding top material

shrinkage.

### TO RAISE THE TOP

With the vehicle standing still, proceed as follows:

1. Lower both door and quarter windows.
2. Rotate the right and left sunvisors downward.
3. Remove the dust hood (boot); stow it in its protective case in the luggage compartment.
4. Actuate the folding top control switch located on the instrument panel; immediately before the No. 1 bow dowel pins enter their respective striker plates, release the switch and open the header clamps. Continue to raise the top until the No. 1 bow comes to rest properly on the windshield header. Close both header clamps making certain that the toggle hoods are fully engaged with their respective catches.

Under certain weather conditions it may be necessary to grasp the side rail directly above the approximate center of the door glass and pull down while clamping the No. 1 bow at the header.

5. Raise the door and quarter windows and rotate the sunvisors as desired.

### TO LOWER THE BACK CURTAIN WINDOW

1. Make certain that the folding top stowage compartment area is clean and free of objects.

2. Disengage the back curtain window zipper completely.

3. Unsnap the assist strap from the No. 4 bow and carefully stow the window back of the rear seat back, making certain that the assembly lays free in the bottom of the folding top stowage compartment.

To prevent back curtain window glass breakage never operate the vehicle with the window unzipped and hanging by the assist strap or, unzipped and resting on the rear seat back.

### TO RAISE THE BACK CURTAIN WINDOW

1. Engage the back curtain window assist strap snap fastener to the No. 4 bow.

2. Fully engage the zipper pilot (leading pin on lower half of zipper) in the zipper slide and zip the window closed.

### POWER TOP TESTS

If the top cannot be lowered or raised satisfactorily, or if it fails to operate at all, and the trouble is not readily apparent, make the following mechanical, electrical, and hydraulic tests to find the cause of the trouble. Always check the battery before making any of the following checks.

### MECHANICAL CHECKS

If the action of the top is slow, raise and lower it and look for bent or misaligned linkage.

### BATTERY CHARGE

The battery charge should be determined before making any electrical checks because a partially discharged battery will cause slow motor and pump operation.

### CURRENT DRAW TEST

To check the current draw in the top operating circuit, disconnect the black wire at the circuit breaker (located on the starter relay), and connect an ammeter in series in the circuit. Operate the top control switch and note the ammeter readings. The current draw should be 28 amperes maximum while operating, and 40 to 50 amperes stalled, with a voltage reading of 12.3 volts. Current in excess of 75 amperes indicates a frozen

pump or cylinder or a mechanical obstruction. Low amperage with the motor running and no top movement.

### TOP CONTROL SWITCH TEST

1. Disconnect the wiring harness at the switch multiple connector located behind the instrument panel.

2. Connect one terminal of a test lamp to the black (feed)wire of the top control switch, and ground the other lead. If the test lamp does not light, there is an open or short circuit between the battery and the switch or a bad circuit breaker.

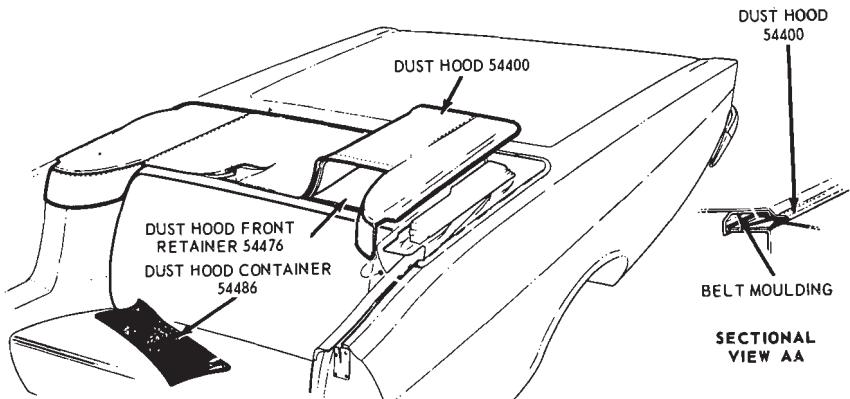
3. If there is voltage to the switch, connect a jumper wire between the black (feed) wire and the red wire, and then between the black wire and the yellow wire. If the top motor operates, the switch is damaged and must be replaced.

### FLUID LEVEL IN RESERVOIR TEST

1. Remove the rear seat cushion and seat back assembly.

2. Place absorbent cloth below the reservoir filler plug.

3. Remove the filler plug and check the fluid level. It should be level with the bottom of the filler plug hole. If fluid appears excessively low, check for leaks or restrictions in the hydraulic lines, loose or broken fittings and/or damaged cylinders. If the system is faulty, repair or replace



R1419-A

FIG. 1—Typical Convertible Top Dust Hood Installation

as necessary and bleed the system as described below.

#### BLEEDING THE SYSTEM

1. Lower the door and quarter windows.
2. Remove the filler plug from the reservoir and fill to the bottom of the filler plug hole with type A transmission fluid.
3. With the filler plug installed by one or two threads, and engine running, cycle the top a sufficient number of times to adequately purge the system of air pockets. Excessive air will be noted in the transparent lines. Replenish the reservoir as necessary during the bleeding operation. Fill to the proper level and tighten the filler plug. When cycling the top, make certain that the cylinders have freedom of movement in both the inner quarter panel structure and quarter trim panels.

#### CARE OF TOP FABRIC

Proper care of the top material will prevent mildew and minimize shrinkage. Never stack the top when it is

damp. Always use the convertible top vinyl boot to keep the top material clean, dry, and in position when the top is stacked.

Use the top compartment behind the rear seat back only for stowage of the top. Stowage of other items may also damage the top material or break the back curtain glass.

The vinyl top may be washed each time the car is washed. Clean the material with Ford Interior Trim Cleaner and a suede brush. For an extremely soiled top, it may be necessary to repeat the cleaning operation. Be sure to rinse the top and painted surfaces thoroughly with clean water during and after cleaning.

**Unapproved cleaners can result in damage to the top material and/or painted surfaces.**

The vinyl coating becomes tacky at approximately 180°F. Therefore, when making paint repairs, be sure to protect the top material from heat.

#### DUST HOOD

##### REMOVAL

1. Unsnap the retaining button at

each inside forward corner.

2. Gently lift the tongued front edge of the hood assembly out of the retainer strip along the top rear of the seat back.

3. Starting at one front side, pull the hood assembly edges out from under the belt moulding.

4. Fold the hood and store it in its container.

#### INSTALLATION

1. Remove the hood assembly from its container.

2. Unfold the hood assembly and position it over the stacked top.

3. Engage the snap fastener at each forward corner (Fig. 1), and then install (push in) the tongued front edge of the hood assembly into the hood retainer across the top of the rear seat back.

4. Starting at either forward corner of the hood assembly, install the flanged edge of the hood assembly under the belt moulding (View AA, Fig. 1) all the way around to the other forward corner.

## 2 REMOVAL AND OVERHAUL OF THE PUMP, CYLINDER AND MOTOR ASSEMBLIES—ALL CONVERTIBLES

#### MOTOR AND PUMP

A pump repair kit and a reservoir repair kit are available for service.

#### REMOVAL

1. Operate the top to the fully raised position.
2. Remove the rear seat cushion and seat back.
3. Disconnect the motor leads and the ground wire.
4. Vent the reservoir by removing the filler plug, and then re-install the filler plug. The plug is located as shown in Fig. 2 on the Montego and Fairlane. On all other convertibles, the plug is located on top of the reservoir. The reservoir must be vented in order to equalize the pressure. This lessens the possibility of fluid spraying on the trim and paint when the hoses are disconnected.
5. Place absorbent cloths beneath the hose connections, disconnect the

hoses, and then plug the open fittings and lines.

6. Remove the retaining nuts and washers and remove the motor and pump assembly from the floor pan. Exercise care to prevent loss of the rubber grommets.

#### DISASSEMBLY

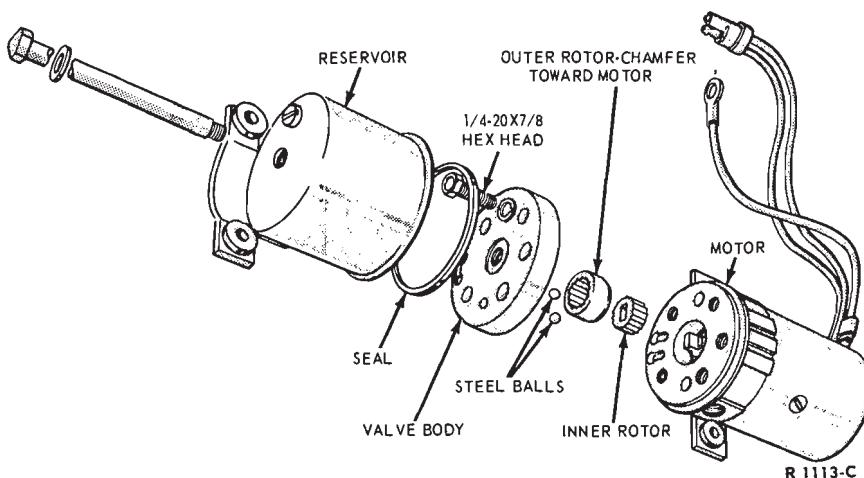
1. Remove the filler plug, and drain the fluid from the reservoir into a clean container.
2. Scribe lines on the reservoir and pump body so that these parts can be positioned properly upon assembly.
3. Remove the center bolt from the reservoir cover (Fig. 2).
4. Remove the reservoir cover and the O-ring seal from the pump.
5. Remove the mounting bolts that hold the valve body to the pump body.
6. Place a cloth under the assembly and carefully remove the valve body so that the check balls are not lost.

7. Remove the inner and outer rotors and the drive ball.

#### ASSEMBLY

Use the parts contained in the pump repair kit when assembling the pump or reservoir.

1. Install the inner rotor on the armature shaft.
2. Install the outer rotor over the inner rotor.
3. Place the check balls in the motor body channels.
4. Install the valve body on the motor body.
5. Install the five valve body mounting bolts.
6. Install the O-ring seal on the valve body.
7. Install a new seal on the center bolt, and install the reservoir cover on the valve body, using the line previously scribed as a guide.
8. Place the assembly in a horizontal position, fill the reservoir with



**FIG. 2—Typical Motor and Pump Disassembled—Fairlane Shown**

automatic transmission fluid, C1AZ-19582-A to the level of the bottom of the filler plug hole. Install the filler plug and a new seal.

#### INSTALLATION

1. Remove the plugs from the lines and fittings, and connect the lines to the pump. Use cloths to absorb any fluid that leaks out of the lines or the pump.
2. Install the assembly on the floor pan, making sure that the rubber grommets are in proper position

under the mounting brackets.

3. Connect the motor lead wires at the connector, and connect the ground wire.
4. Operate the top assembly two or three times to bleed any air from the system, and check the fluid level in the reservoir. The fluid level should not be less than 1/4 inch below the filler plug opening. **The top must be up when the fluid level is checked.**
5. Position the retaining clips on the rear folding top compartment support wire and install the retaining screws.

6. Remove the covers from the luggage compartment floor and close the deck lid.

#### LIFT CYLINDER—POWER TOP

1. Remove the rear seats and quarter trim panel.
2. Remove the hairpin clip, washer, and clevis pin from the upper end of the cylinder.
3. Remove the mounting bolts, bracket, and bushings from the cylinder.
4. Pull the cylinder down; place absorbent cloths below the hose connections; disconnect the hydraulic lines, and remove the cylinder.
5. Install the hydraulic lines on the new cylinder and install the cylinder bushings, mounting bracket, and bolts.
6. Install the clevis pin, washer, and hairpin at the upper end of the cylinder.
7. Operate the top assembly two or three times to bleed any air from the system, and check the fluid level in the reservoir. The fluid level should not be less than 1/4 inch below the filler plug opening. **The top must be up when the fluid level is checked.**
8. Install the quarter trim panel and rear seats.

### 3 TOP ADJUSTMENTS—FORD, METEOR, MERCURY, MUSTANG AND COUGAR

#### LATERAL ADJUSTMENT

The main pivot bracket adjustment is used to achieve the required clearance between the rear side rail and the quarter belt moulding. The Ford, Mercury, Meteor clearance dimension is 13/32-inch and the Mustang and Cougar dimension is 27/64-inch (Figs. 3 and 4).

#### SIDE RAIL-TO-DOOR GLASS ADJUSTMENT—UNDERCROWN

The eccentric pin located in the balance link lower attachment for Ford, Mercury and Meteor (Fig. 5) is used to correct side rail undercrown and to obtain a 15/32-inch vertical clearance between the side rail and

the door glass frame (Fig. 6).

The Mustang and Cougar eccentric pin is similar to that shown in Fig. 5 except that it is located in the balance link upper attachment at the center side rail. This eccentric pin is also used to correct side rail undercrown and adjust the vertical clearance between the side rail and door glass. On the Mustang and Cougar the clearance is 13/32-inch (Fig. 6).

There is no eccentric adjustment at the No. 2 bow as on previous Mustang designs.

#### SIDE RAIL-TO-DOOR GLASS ADJUSTMENT—OVERCROWN

An overcrown adjusting screw is located in the front face of the rear half

of the side rail hinge in all Ford, Meteor, Mercury, Mustang and Cougar convertibles and is used to obtain a constant vertical relationship between the side rail and the door glass (Fig. 6).

#### NO. 2 AND 3 BOW ADJUSTMENTS—MUSTANG AND COUGAR

Raise the top and lock it to the windshield header. Loosen the lock nut on the No. 2 bow attaching bracket, and rotate the eccentric pin to raise or lower the top material along the door glass line. The specified clearance for the top material to door glass frame is 1/8 inch. Hold the eccentric and tighten the lock nut.

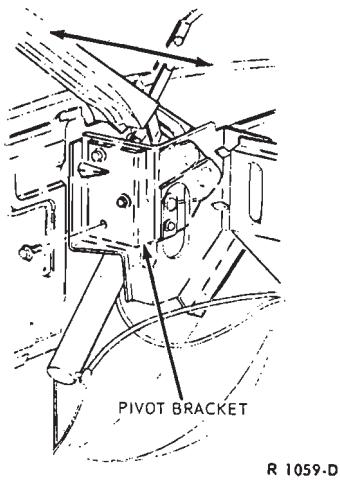


FIG. 3—Main Pivot Adjustment

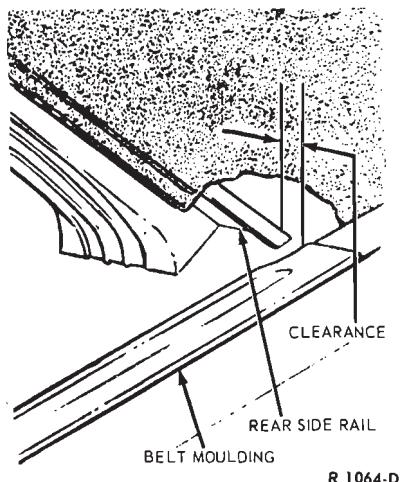


FIG. 4—Top Rear Side Rail-To-Belt Moulding Clearance

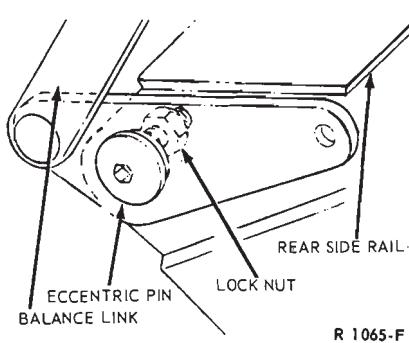


FIG. 5—Balance Link Eccentric Adjustment

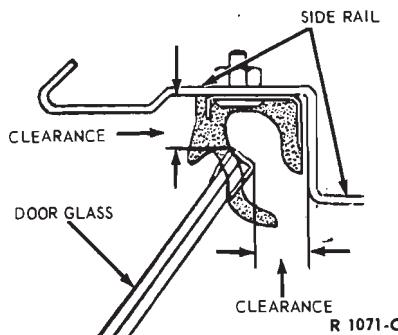


FIG. 6—Side Rail-To-Door Glass Clearance

#### NO. 2 BOW ADJUSTMENT- FORD, METEOR AND MERCURY

The No. 2 bow to side rail attaching bracket incorporates an elongated vertical slot to permit up and down adjustment of the bow to obtain the specified clearance between the top edge material and the door window line.

Adjustment is accomplished by

loosening the No. 2 bow to side rail bracket attachment and raising each side of the bow. Retighten the nut to retain the adjustment. (Torque the nut to 7-12 ft-lbs).

The specified clearance between the top material to door window is flush to 1/8-inch clearance.

#### TOGGLE CLAMP HOOK AND DOWEL ADJUSTMENT

The header clamp toggle hooks are adjustable up or down to obtain adequate windshield header seal.

To adjust, proceed as follows:

1. To determine which side is not sealing, check the weatherstrip between the No. 1 bow and the header with a 3 by 5-inch card. A reasonable pull must be felt as the card is pulled out. Both toggle clamps need not be adjusted unless necessary.

2. Release the toggle clamps, loosen the locking screw, and thread the toggle hook in or out until adequate sealing pressure is applied at the header weatherstrip. Tighten the toggle clamp locking screw after adjustment. Excessive tightening of the toggle clamp is detrimental to a good seal.

3. The No. 1 bow dowel pins are adjustable inboard and outboard to obtain proper relationship of the No. 1 bow to the windshield header. Loosen the dowel pin lock nut and adjust the dowel pin inboard or outboard as necessary. Tighten the lock nut.

#### SIDE RAIL WEATHERSTRIP ADJUSTMENT

The front side rail weatherstrip can be adjusted in or out by bending the insert in the weatherstrip.

## 4 TOP ADJUSTMENTS—FAIRLANE

Before aligning the top, visually determine if the trouble results from top misalignment and/or window misalignment. It may be necessary to align both the top and the windows because of the relationship between the two. Adjustments of the door and quarter windows must be checked and any necessary changes made before making top adjustments. These windows must be fully closed to insure proper top adjustment. Door window and quarter window adjustments are

outlined in Group 17.

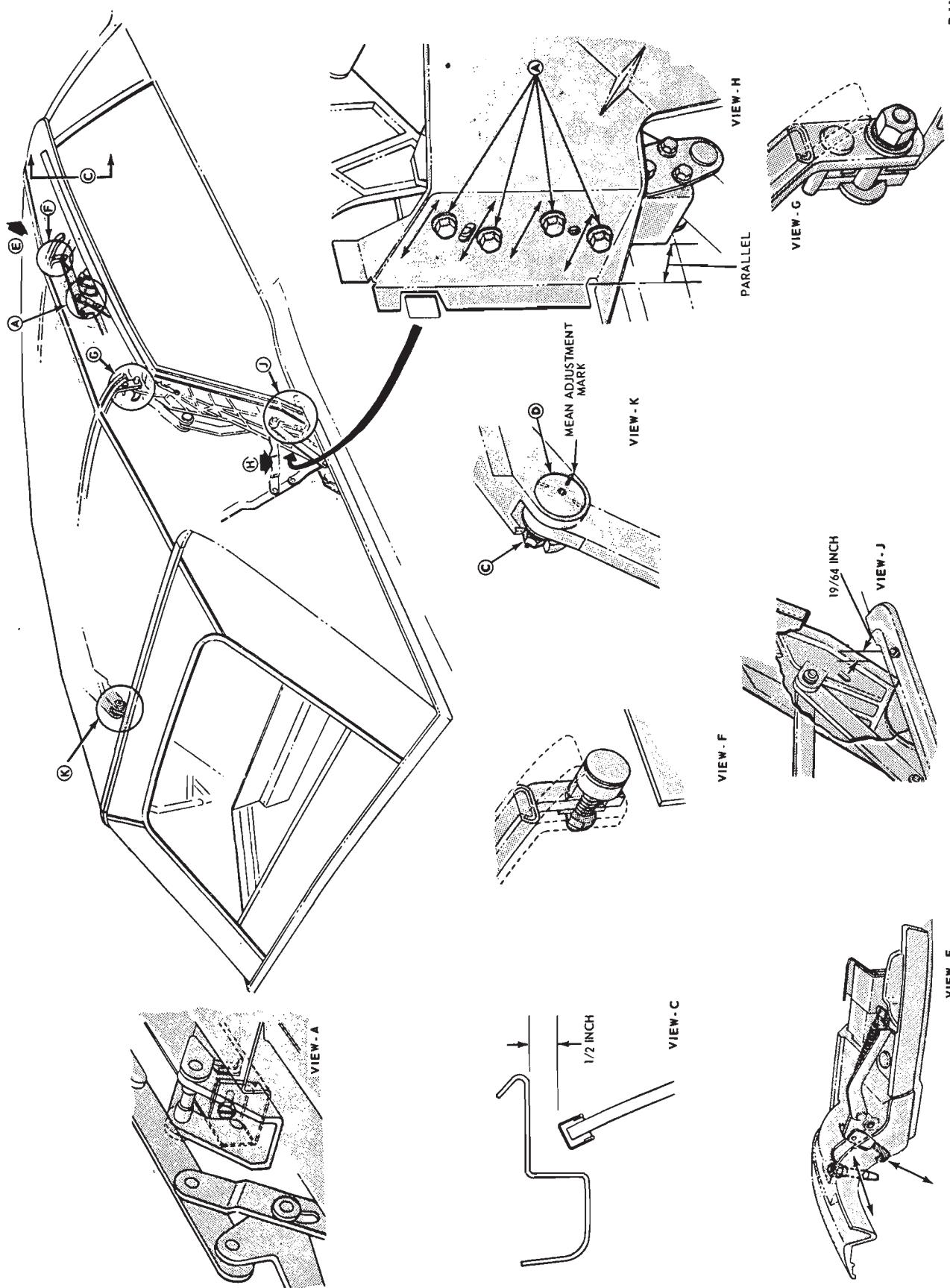
#### ADJUSTMENT PROCEDURE

The top assembly must be in the up position with the door and quarter windows in the fully raised position (Fig. 7).

1. Loosen the screw and washer assemblies (Fig. 7, Item A), and adjust the bracket (Item B, part of the top assembly) inboard or outboard to obtain the 19/64-inch clearance di-

mension between the rear side rail and the belt side moulding. The bracket must be adjusted and secured in a vertical position. Tighten the screw and washer assemblies.

2. To maintain the correct design relationship between the rails and glass, the set screw (Item W, Fig. 7) must be adjusted as follows: With the top up and not latched, the front and center rails should be made to maintain a continuous curve which matches the curve of the top of the side



R 1114-E

FIG. 7—Fairlane Top Adjustments

glass when pressure is applied upward under the hinge.

3. Loosen the nut (Item C, Fig. 7) and rotate the cam pin (Item D) to obtain the 1/2-inch parallel dimension between the rails and door glass, and between the rear rail and quarter glass. The mark on the cam pin must not be rotated more than 90 degrees rearward of the mean adjustment mark on the rail, and should be rotated as far toward the front of the vehicle as possible when the top is up and latched. Hold the cam pin (Item D) and torque the nut (Item C) to 2-5 ft-lbs. If the dowel (Item E) does not

line up with the sun visor bracket dowel hole on a fore and aft line, the top cloth is to be removed from the No. 1 bow. Loosen 2 screws (Item F). Then, the top cloth should be tacked and cemented. In some cases, the No. 1 bow can be adjusted to a small degree (1/16 inch) without removing and tacking the top cloth.

4. Door and quarter windows must be adjusted. Door window and quarter window adjustments are outlined in Group 17.

5. Loosen the nut (Item G) and adjust the dowel (Item E) inboard or outboard to center the dowel in the

sun visor bracket dowel hold. Then, tighten the nut.

6. To maintain a proper design relationship between the No. 1 bow and header, loosen the set screw (Item H) and rotate the hook (Item J) in or out. Then, tighten the set screws.

7. If interference is encountered between the top cloth and the top of the door glass frame when the door is opened, the No. 2 bow and/or No. 3 bow can be adjusted by loosening the nuts (Item K and L) and raising the bows. After adjustment, tighten the nuts.

## 5 FORD METEOR AND MERCURY—REMOVAL AND INSTALLATION

### ROOF HOLD-DOWN CLAMP

Remove the weatherstrip and retainer from the No. 1 bow casting for access to the clamp. Unhook the return spring, drive out the pin from the latch assembly and remove the handle pivot screw. Remove the shoulder screw at the clamp slide attachment and remove the assembly from the bow casting.

Check and adjust the assembly after installing.

### BACK CURTAIN WINDOW AND ZIPPER

#### REMOVAL

Protect the upper back panel, luggage compartment door and both quarter panels with suitable coverings. Trim markings referred to should be made with tailors crayon or equivalent for ease of removal.

1. Partially raise the convertible top.

2. Disengage the compartment trim from the belt center and side front tacking strips.

3. Remove the back curtain tacking strip attaching screws.

4. Disengage the zipper and the assist strap and remove the back curtain assembly.

5. Mark the back curtain lower trim material along the lower edge of the belt center tacking strip and remove the tacking strip.

If it is necessary to replace the upper half of the zipper assembly, proceed with steps 6 through 11 to remove and steps 1 through 8 to in-

stall. If the upper half of the zipper does not require replacement, proceed to step 8 under Installation.

6. Remove the No. 4 bow outside moulding end tips, moulding and moulding retainer. Carefully detach the top material from the No. 4 bow.

7. Remove both side rail coat hanger hooks and install the two fabricated bow alignment gauges (Fig. 8). Retain each gauge with a No. 8-18 x 1 1/4-inch pan-head screw and washer inserted into the 1/4-inch diameter hole in the gauge (Fig. 8).

8. Remove both belt side front tacking strip attaching screws.

9. Remove rear side rail weatherstrips and pull the cemented quarter deck flap loose at each rear side rail:

10. Fold the top trim assembly to one side sufficiently to expose the No. 4 bow. Mark the bow to indicate the top back stay webbing location (both sides). Also mark the No. 4 bow at both ends of the zipper elastic material.

11. Detach the top back stay webbing and the upper half of the zipper assembly.

#### INSTALLATION

1. Carefully position the new upper half of the zipper assembly on the No. 4 bow; the edge of the material should be flush with the front edge of the No. 4 bow tacking strip. Working from the center outboard, stretch and secure the assembly with staples. Both ends of the elastic must correspond with the marks on the No. 4 bow (step 11 of Removal).

2. Position the top back stay web-

bing on the No. 4 bow and secure each with staples.

3. Position the top material on the No. 4 bow and secure it with staples.

4. Install a narrow strip of tape over the staples and install the No. 4 bow outside moulding retainer, moulding and end tips.

5. Install both belt side front tacking strip attaching screws.

6. Cement the quarter deck flaps to each rear side rail.

7. Install both side rail weatherstrips and adjust as necessary.

8. Remove the bow locating gauges and install the coat hanger hooks.

9. Trim off the selvage of the old back curtain material that extends below the tacking strip. Refer to the mark made in Step 6 under Removal.

10. Using the old back curtain window assembly as a template, mark the new curtain to indicate the lower edge of the tacking strip. Also mark the tacking strip attaching hole locations. Remove the old back curtain assembly and cut out the tacking strip attaching holes in the new curtain only. Do not cut off the selvage of the new back curtain window assembly.

11. Center the new back curtain assembly on the belt center tacking strip. Locate the aligning mark across the lower edge of the material with the lower edge of the tacking strip and secure it with staples.

12. Fasten the back curtain assist strap to the No. 4 bow and engage the two zipper halves.

13. Install the belt center tacking strip attaching screws.

14. Install the top compartment trim to the belt tacking strips.

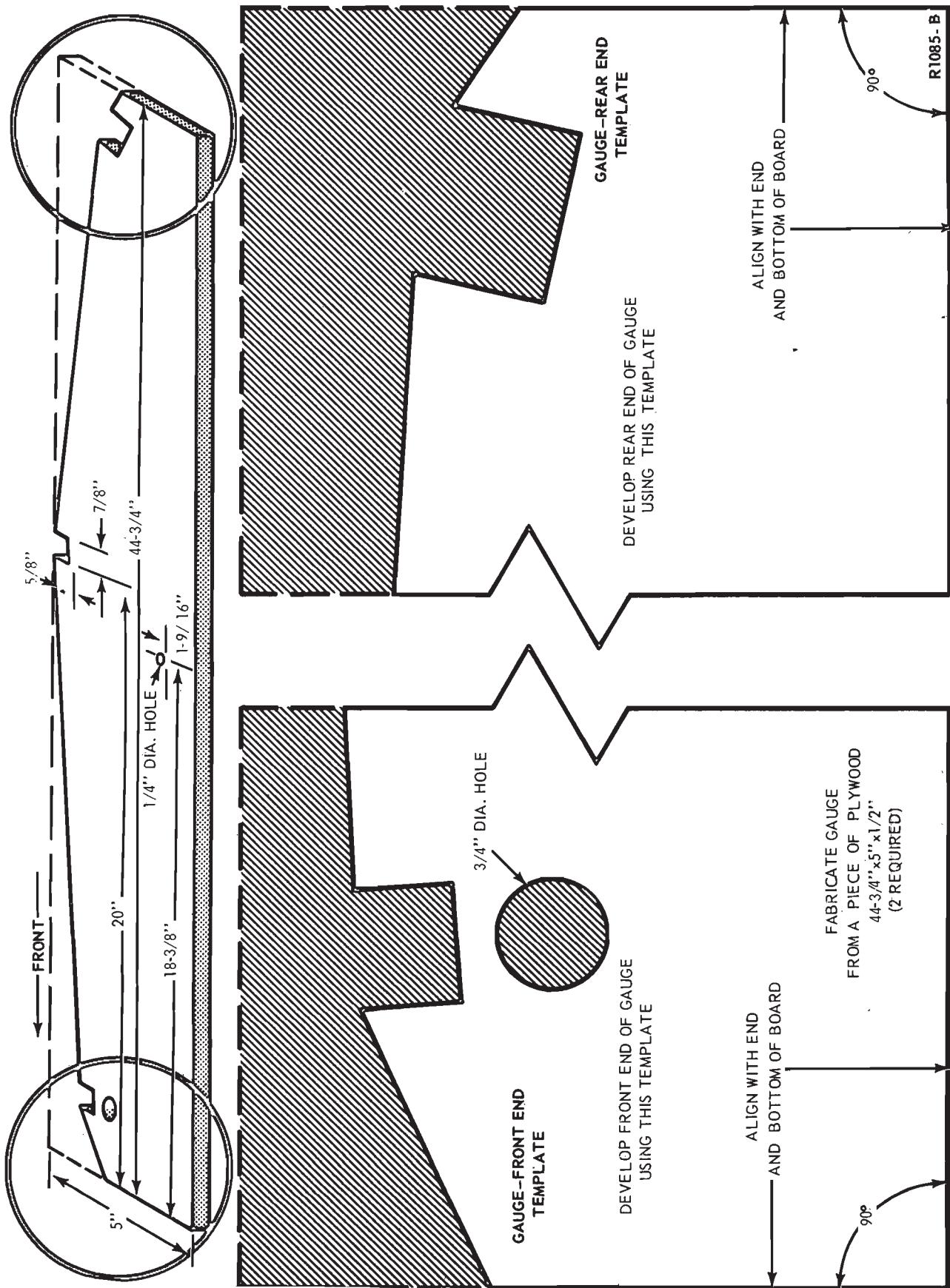


FIG. 8—Bow Locating Gauge Fabrication—Ford, Meteor, Mercury

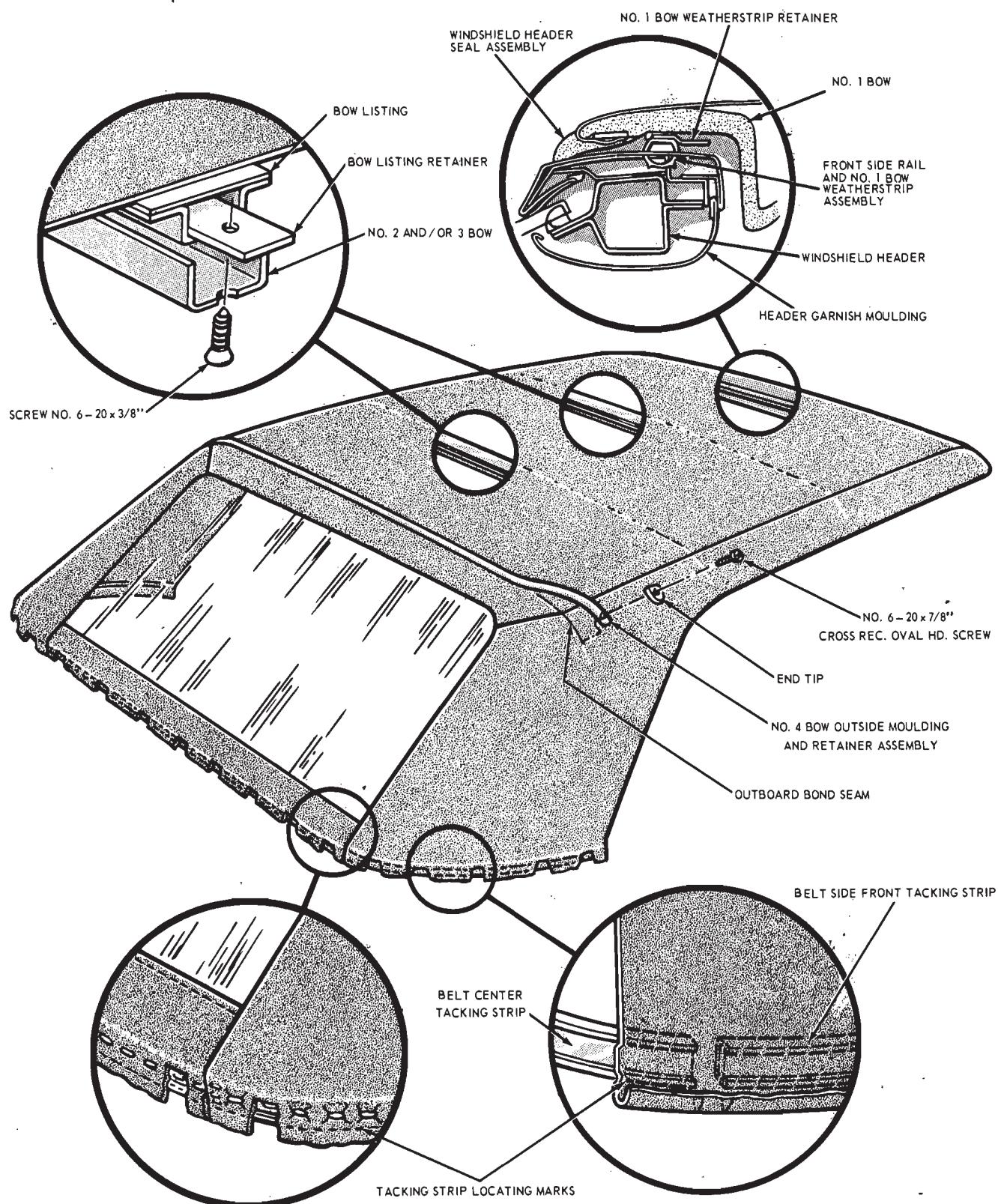


FIG. 9—Folding Top Fabric Installation—Ford, Meteor, Mercury

R 1119-B

**TOP COMPARTMENT TRIM****REMOVAL**

1. Disengage the compartment trim support wire from the floor pan clip (each side) and pull the cemented flap loose from the floor pan.

2. Remove the compartment rear trim assembly to belt tacking strip plastic drive pins.

3. Remove the compartment rear trim assembly to rear seat back strainer flange attaching screws.

4. Remove the compartment trim support wire and discard the old compartment trim assembly.

**INSTALLATION**

1. Insert the support wire through the retaining sleeve of the new compartment trim assembly.

2. Position the compartment trim assembly and install the attaching screws (No. 8-18 x 1 1/2-inch flat head) across the rear seat back strainer.

3. Drill sixteen 7/64-inch holes through the compartment trim stiffener corresponding to the existing holes in the tacking strips. After each hole is drilled, install the attaching screws.

4. Install the compartment trim support wire under the floor pan retaining clips and cement the flap to the floor pan.

**CONVERTIBLE TOP FABRIC**

Protect the upper back panel, luggage compartment door, and both quarter panels with suitable coverings. Trim markings referred to should be made with tailors crayon or equivalent for ease of removal.

Fabricate two bow locating gauges to the dimensions illustrated in Fig. 8.

**REMOVAL**

1. Disconnect the folding top compartment trim from the belt tacking strips.

2. Remove all the belt tacking strip attaching screws. Unzip the rear curtain window and remove the window with the center tacking strip attached.

3. Before disconnecting the top quarter deck material from the belt side front tacking strips, mark the material in the following areas:

Mark the quarter deck material along the lower edge of the tacking strips (Fig. 9).

4. Remove the top quarter deck material from the belt side front tacking strips.

5. Lower the top and remove the weatherstrip retainer from the No. 1 bow. Remove the front side weatherstrip attaching nuts from both front side rails and remove the weatherstrip.

6. Remove the windshield header seal assembly and the top material from the No. 1 bow (Fig. 9).

7. Remove the rear side rail weatherstrips. Loosen the top quarter materials flaps that are cemented to the front and rear side rails.

8. Remove the top material hold down cables from the front side rail key hole slot after removing the slot retainer. Pull the cable rearward until each is removed from the retaining sleeve.

9. Raise the top and clamp the No. 1 bow to the header. Remove both side rail coat hanger hooks.

10. Install the two fabricated gauges for aligning the No. 2, 3 and 4 bows. Align the 1/4-inch hole in the wooden gauge with the coat hanger hook hole in the side rail and secure each gauge to the side rail with a No. 8-18 x 1 1/4-inch pan-head screw and washer (Fig. 8).

11. Remove the No. 2 and No. 3 bow listing retainer screws and remove both retainers from the listings (Fig. 9).

12. Remove the No. 4 bow outside moulding end tips, moulding, and moulding retainer.

13. Detach the top material from the No. 4 bow and place the assembly on a bench.

14. Trim off the selvage edge from the old top quarter deck material that extended below the tacking strips. Refer to Step 3 above.

**INSTALLATION**

1. Using the old top assembly as a template, mark the new top quarter deck to indicate the lower edge of the tacking strips. Also mark the tacking strip attaching holes. Cut out the belt side front tacking strip hole locations in the new top only. **Do not trim off the selvage edge.**

2. Fold the top center deck material to locate and mark a fore-and aft centerline at the No. 4 bow area. A corresponding center mark is provided on the upper surface of the No. 4 bow.

3. Align the belt side front tacking strip with the aligning marks on the top quarter deck (Fig. 9) and retain it with staples.

4. Position the top trim assembly on the folding top stack. Center the

material on the No. 4 bow, making certain that the short outboard bond seam (Fig. 9) is also centered fore-and-aft on the No. 4 bow. Secure the material to the bow with staples.

5. Insert the two retainers in the No. 2 and 3 bow listings (Fig. 9).

6. Route the quarter deck retaining cable through the hold-down sleeves in the top material. Insert each cable through its respective front side rail keyhole slot and retain it with the keyhole retainer.

7. Install the belt tacking strip attaching screws loosely, approximately 1/4-inch from bottoming.

8. Pull the top trim material forward over the No. 1 bow until the No. 2 and No. 3 bow listings are centered over their respective bows. While maintaining tension on the top trim, place a pencil mark on the outer surface of the trim material along the forward edge of the No. 1 bow.

9. Remove the two bow aligning gauges and install the coat hanger hooks.

10. Fold the front edge of the top material back from the No. 1 bow. Disengage the No. 1 bow from the windshield header and prop it up one foot above the header.

11. Apply trim cement C2AZ-19C525-A across the lower front surface of the No. 1 bow and tacking strip and a like amount of cement to the adjacent inner surface of the top material.

12. Lower the No. 1 bow on the windshield header. **Do not latch the clamps.** With the top material properly centered on the No. 1 bow, start at the outer front corners and alternately pull the material forward to the pencil aligning mark. Make certain that all wrinkles are removed, then, fold and cement the material to the underside of the bow.

13. Position the windshield header seal assembly to the No. 1 bow and secure the seal and top material with staples. Trim off the excess top material.

14. Cement the front and rear flaps to each side rail. Pierce holes in the flaps for weatherstrip attachments.

15. Install the front side rail weatherstrip and the No. 1 bow retainer.

16. Install the rear side rail weatherstrips. Adjust as required.

17. Install the back curtain window.

18. With the No. 1 bow clamped to the header, tighten all belt tacking strip attaching screws securely.

19. Attach the compartment trim

to the belt tacking strips.

20. Attach the compartment trim to the rear seat back strainer flange.

21. Engage the compartment trim support wire to the luggage compartment door hinge bracket springs.

22. Install the No. 4 bow outside moulding retainer, moulding and the two end tips.

## 6 FAIRLANE—REMOVAL AND INSTALLATION

### ROOF HOLD DOWN CLAMP

#### REMOVAL

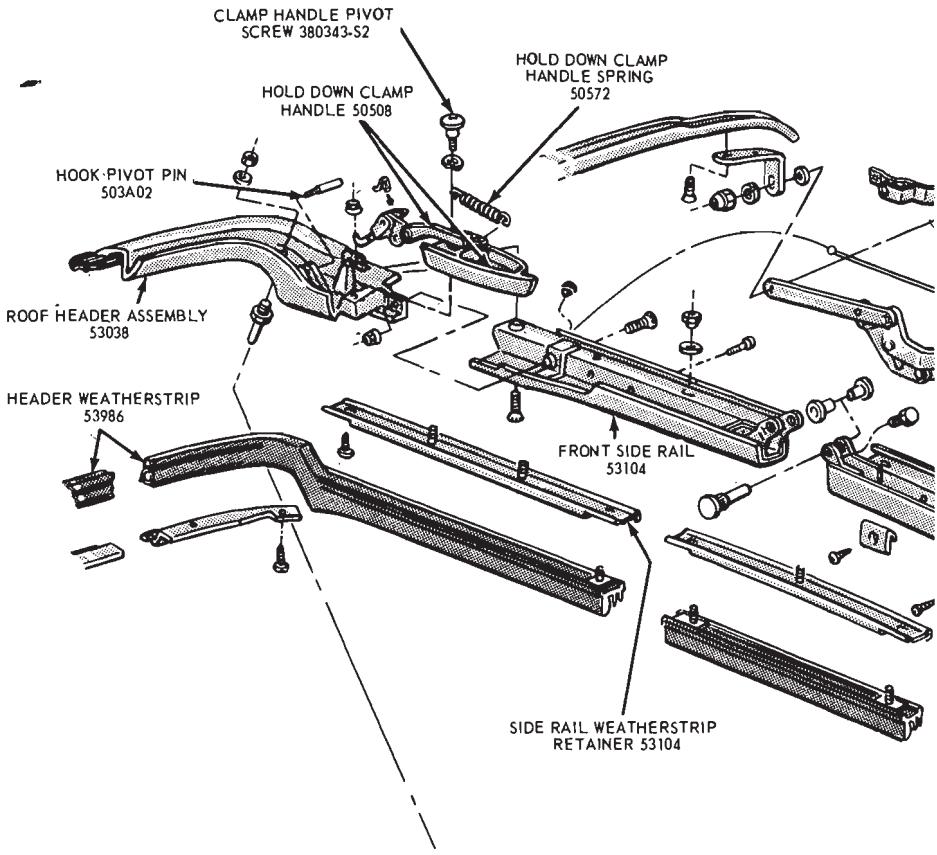
1. Lower the top.
2. Remove the three tee nuts and one screw retaining the front side rail weatherstrip and retainer to the side rail (Fig. 10).
3. Remove one screw from the corner of the header weatherstrip retainer and position the front side rail weatherstrip and retainer out of the way.
4. Unhook and remove the hold down clamp handle spring.
5. Remove the pivot screw from the clamp handle.
6. Remove the hook pivot pin from the roof header and remove the hold down clamp assembly from the header and side rail.

#### INSTALLATION

1. Position the clamp assembly to the roof header and side rail.
2. Install the hook pivot pin and handle pivot screw.
3. Install the hold down handle clamp spring.
4. Position the front side rail weatherstrip and retainer to the side rail and install the retaining nuts and screw.
5. Position the weatherstrip to the roof header and install the retaining screw.
6. Lower the top and check the operation of the latch and adjust the latch as necessary.

### BACK CURTAIN

1. Unfasten the clamps that hold the top to the windshield header.
2. Remove the retainer pins retaining the folding top rear compartment trim to the tacking strips and position the trim away from the tacking strips.
3. Remove the bolts and lock washers that retain the curtain tacking strip to the body panel.
4. Open the back curtain window slide fastener and remove the curtain assembly.



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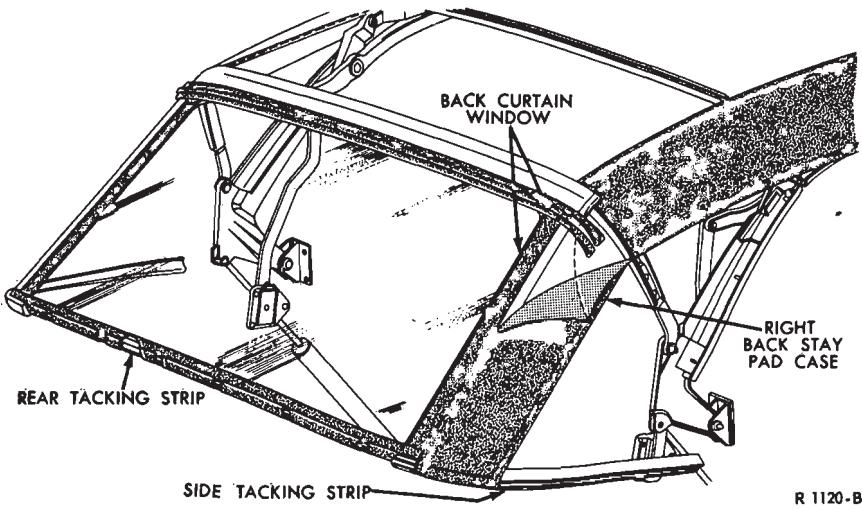
FIG. 10—Convertible Top Hold Down Clamp—Fairlane

5. Pull the tacking strips from the curtain and remove the staples from the tacking strip (Fig. 11).
6. Remove the tacking strip lock screws from the tacking strips.
7. Properly position the curtain and staple it securely to the tacking strip.
8. Staple the side tacking strips to the curtain.
9. Position the curtain assembly to the body panel, and loosely install the belt tacking strip retaining bolts and lock washers.
10. Close the curtain window slide fastener.
11. To adjust the curtain window tension and remove wrinkles, tighten or loosen the tacking strip retaining bolts as required. After adjusting the curtain, install and tighten the tacking strip lock screws until they bottom.

- against the body panel.
12. Reposition the folding top rear compartment trim and install the retainer pins.

### BACK CURTAIN ZIPPER

1. Unhook the top from the windshield header and prop the top up to relieve tension.
2. Unzip the back curtain.
3. Remove the retainer pins retaining the folding top rear compartment trim to the tacking strips and position the trim away from the tacking strips.
4. Remove the bolts and flat washers that retain the curtain tacking strip to the body panel, and remove the back curtain.
5. Mark the zipper location on the back curtain, then, remove the zipper



**FIG. 11—Back Curtain—Fairlane**

from the back curtain and sew on a new zipper.

6. Remove the bolts and flat washers that retain the side belt tacking strips to the body.

7. Remove the rear bow binding end cap; slide out the binding insert and remove the staples and retainer.

8. Remove the staples retaining the top deck and quarter assembly to the rear bow.

9. Remove the staples retaining the top right and left back stay pad case assemblies to the rear roof bow.

10. Remove the staples retaining the zipper to the rear bow tacking strip and remove the zipper.

11. Position the upper half of the back curtain zipper to the center of the rear roof bow tacking strip. Staple or tack it securely to the tacking strip.

12. Staple the top left and right back stay pad case assemblies to the rear bow tacking strip. Seal the unused holes in the top material.

13. Staple the top deck and quarter assembly to the rear bow tacking strip.

14. Staple the binding in position, and install the binding end caps.

15. Position the side belt tacking strips to the body and install the retaining bolts.

16. Position the back curtain in the vehicle and install the retaining bolts.

17. Zip the curtain shut and remove the prop from the top. Then, lock the top to the windshield header.

18. Tighten or loosen the tacking strip retaining bolts as required to adjust the curtain tension and remove wrinkles.

19. Reposition the folding top rear compartment trim and install the retainer pins.

## CONVERTIBLE TOP FABRIC

The convertible top consists of the deck and two side quarters, bonded into one piece of material. The bonded seams eliminate the possibility of leaks and also separation, due to thread deterioration. In most cases it will be advantageous to replace the back curtain when replacing the top fabric.

### REMOVAL

1. Place a protective cover across the deck, cowl and hood to prevent scratching the finish when replacing the top.

2. Remove the rear seat cushion and seat back.

3. Raise the top to gain access to the underside of the front bow.

4. Remove the No. 1 bow weather-strip retainer (Fig. 12) and the weatherstrip. Remove the windshield header seal.

5. Remove both front side rail weatherstrips and weatherstrip retainers.

6. Remove the two center side rail and the two rear side rail weatherstrips and weatherstrip retainers.

7. Remove the screw and washer that secures each end of the folding top compartment well to the pivot bracket supports.

8. Remove the retainer pins retaining the folding top rear compartment trim to the tacking strips and position the trim away from the tacking strips.

9. Remove the tip (Fig. 12) from each end of the moulding on the rear bow. Carefully pull the moulding out of the retainer. Pry the moulding retainer off the bow.

10. To assure the proper location of the tacking strips in the new top assembly, back curtain assembly and/or compartment trim assembly, mark the following locations with tailor's crayon:

Locate and mark the center of the belt center tacking strip retainer. Transpose this center mark to the adjacent rear curtain and compartment trim materials.

Mark the rear curtain along the lower edge of the belt center tacking strip.

Mark the belt center tacking strip to indicate the rear window opening at both sides.

Mark the top deck quarters along the lower edge and at the ends of each belt side front tacking strip.

11. Remove the bolts that attach the top and back curtain tacking strips to the body.

12. Remove the staples that secure the top material to the rear bow.

13. Carefully pull the top material free from the underside of each side rail.

14. Remove the staples that secure the top material to the underside of the front bow.

15. Remove the retainer screws and carefully separate the top from the listings on the No. 2 and 3 bows. Remove the staples that secure the top back stay-pads.

16. Remove the staples that secure the upper end of the back curtain to the rear bow. Remove the curtain.

### INSTALLATION

1. Remove the tacking strips from the old top and back curtain.

2. Staple them to the new top and back curtain in the same location as they were on the old top.

3. Center the dot on the back curtain with the V mark (center) on the rear bow and staple the upper half of the zipper to the bow. Separate the curtain from the upper half of the zipper.

4. Retack the top back stay pads. Fit the new top on the roof bows.

5. Working from the center outward, staple the top deck to the rear bow. Make sure that the rear section of the slits is stapled to the bow before drawing and stapling the front portion of the slits.

6. Secure, and tighten the quarter deck tacking strips to the body.

7. Center the top material and pull it forward over the front bow to remove the wrinkles from the top deck and quarters and to align the listings

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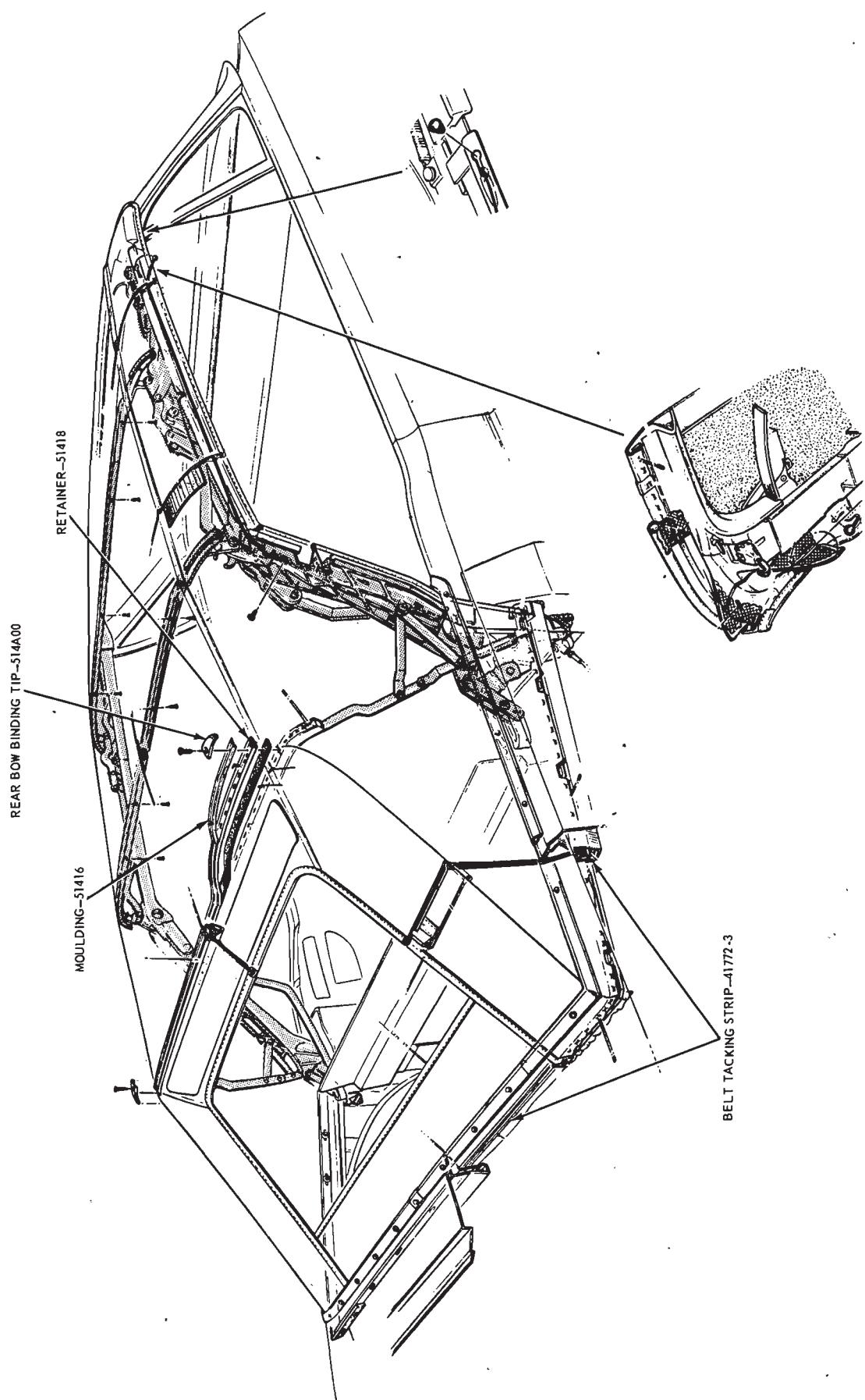


FIG. 12—Convertible Top Trim Installation—Fairlane

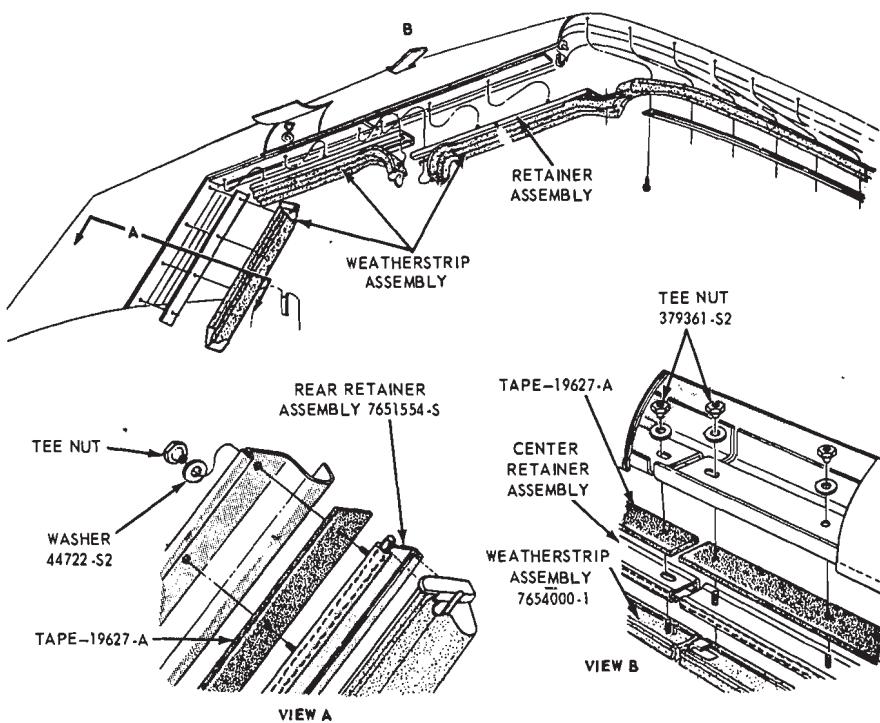


FIG. 13—Convertible Top Weatherstrip—Fairlane

with the No. 2 and 3 bows. While the material is pulled over the front bow, make a reference mark on the material at the leading edge of the bow with a piece of chalk. The mark should extend the entire length of the bow.

8. Raise the top high enough to gain access to the underside of the front bow.

9. Align the reference mark to the leading edge of the bow and staple the material in place. Install the windshield header seal.

10. Install the weatherstrip and the retainers on the No. 1 bow.

11. Secure the flaps to the underside of the side rail with trim cement. Trim the excess material from the flaps.

12. Install the rear, center and the front weatherstrip and retainers on the side rails so that the end of the weatherstrips are in alignment with the side rail joints.

13. Install a piece of tape across the rear bow to cover the staples.

14. Install the moulding retainer, moulding and the two tips on the rear bow.

15. Secure the back curtain to the upper part of the zipper.

16. Secure the back curtain tacking strip in place with the attaching bolts. Tighten the bolts as required working from the center outward to remove all wrinkles.

17. Reposition the folding top rear compartment trim and install the retainer pins.

18. Secure each end of the trim to the pivot bracket supports with a metal screw and washer.

19. Install the rear seat back and cushion.

20. Install listing retainers in the No. 2 and 3 bow listings and install the screws.

21. Remove the protective covers from the deck and the hood.

22. Clean all chalk and reference marks from the top material.

### ROOF FRONT HEADER WEATHERSTRIP

1. Release the toggle clamps and lower the top.

2. Remove the screws attaching the weatherstrip retainer to the No. 1 bow and remove the retainer (Fig. 13).

3. Remove the adjusting screws at the outboard ends of the No. 1 bow.

4. Remove the nuts retaining the weatherstrip to the right and left front side rails and remove the weatherstrip assembly.

5. Position the weatherstrip assembly to the No. 1 bow and install the retainer and retaining screws.

6. Install the adjusting screws at the outboard ends of the No. 1 bow.

7. Position the side rail sections of the weatherstrip and install the retaining nuts.

8. Adjust the weatherstrip for a good seal and tighten the retaining screws and nuts.

9. Raise the top and lock it to the windshield header.

### SIDE RAIL WEATHERSTRIP—CENTER AND/OR REAR

#### REMOVAL

1. Lower the top as far as required to carry-out the operation.

2. If removing the center weatherstrip, remove the three retaining tee nuts and separate the retainer from the side rail. This is not necessary on the rear side rail (Fig. 13).

3. To remove the weatherstrip from the rear side rail slide the weatherstrip out of the retainer. For the center side rail, remove the weatherstrip from the retainer removed in step two.

#### INSTALLATION

1. Install the weatherstrip in the rear side rail by sliding the weatherstrip into the retainer.

2. To install the center side rail weatherstrip, position the weatherstrip in the retainer and position the retainer to the side rail and install the three retaining nuts (Fig. 13).

## 7 MUSTANG AND COUGAR—REMOVAL AND INSTALLATION

### ROOF HOLD DOWN CLAMP

Unlock and partially raise the roof. Remove the front side rail weather-strip (three retaining nuts) and allow it to hang. Drive the roll pin out of the latch assembly and unhook the return spring. Remove the handle pivot screw and remove the handle and clamp assembly.

### BACK CURTAIN

1. Unhook the top from the windshield header and prop the top up to relieve tension.

2. Unzip the back curtain.

3. Remove 3 screws retaining each side of the top compartment trim at the quarter panel.

4. Remove 5 screws attaching the top compartment trim to the rear seat and remove the compartment trim tension springs (Fig. 14).

5. To assure the proper location of the back curtain assembly during installation, the following location marks should be made with tailor's crayon or equivalent:

Locate the center punch mark on the belt center tacking strip retainer (Fig. 15, View A-A). Transpose this center mark to the adjacent rear curtain and compartment trim materials.

Mark the rear curtain along the lower edge of the belt center tacking strip (Fig. 15, View BB and CC).

Mark the belt center tacking strip to indicate the rear window opening at both sides (Fig. 15, View BB).

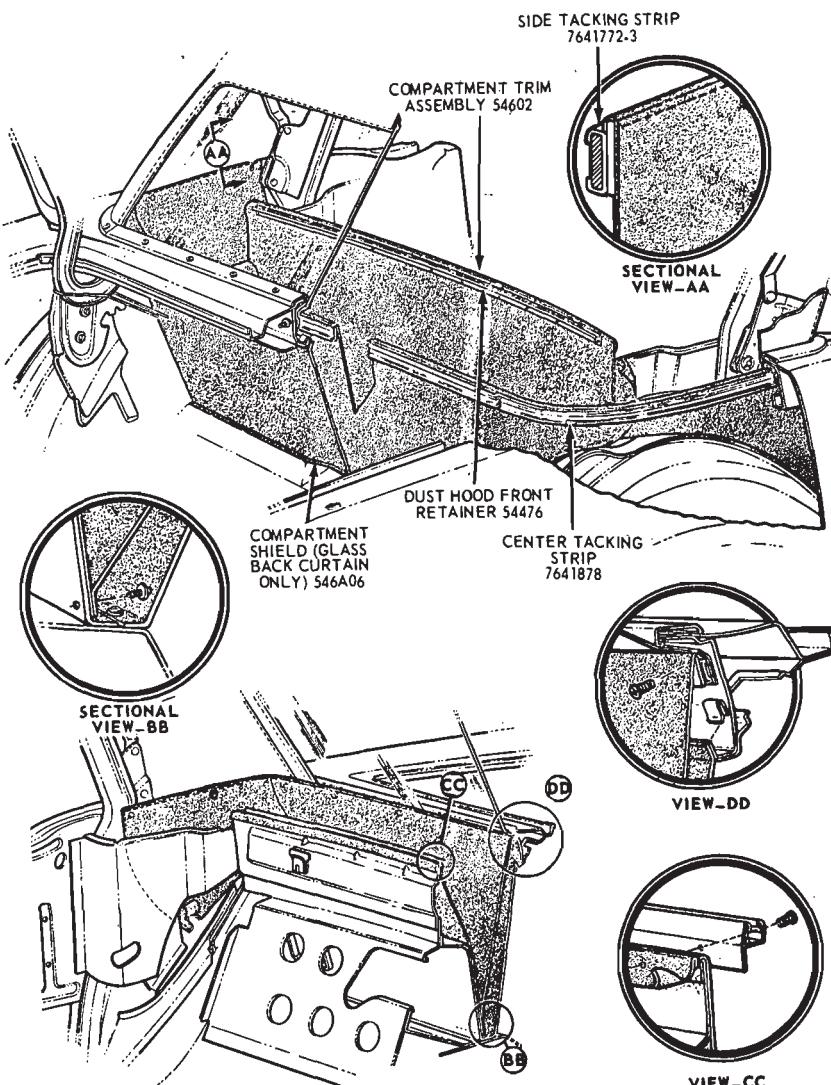
6. Pull the top compartment trim back and remove 8 bolts retaining the back curtain and the center tacking strip.

7. Remove the staples from the webbing and the top quarter from the tacking strip. Remove the back window, top compartment trim, and the tacking strip, as an assembly, from the vehicle.

8. Remove the back curtain from the tacking strip and position the new back curtain to the tacking strip. Cut out the bolt hole locations on the back curtain.

9. Position the back curtain assembly into the vehicle and tack the webbing and quarter assembly to the tacking strip. Then, zip the back curtain shut.

10. Remove the prop from the top and secure the top to the windshield header.



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**FIG. 14—Back Curtain Installation—Mustang, Cougar**

11. Install and tighten the tacking strip attaching bolts.

12. Install the top compartment trim quarter and seat back retaining screws. Clean the top in the rear roof bow area with a suitable cleaner.

### BACK CURTAIN ZIPPER

1. Unhook the top from the windshield header and prop the top up to relieve tension.

2. Unzip the back curtain.

3. Remove the rear roof bow retainer tips and pull the outside moulding from the rear bow.

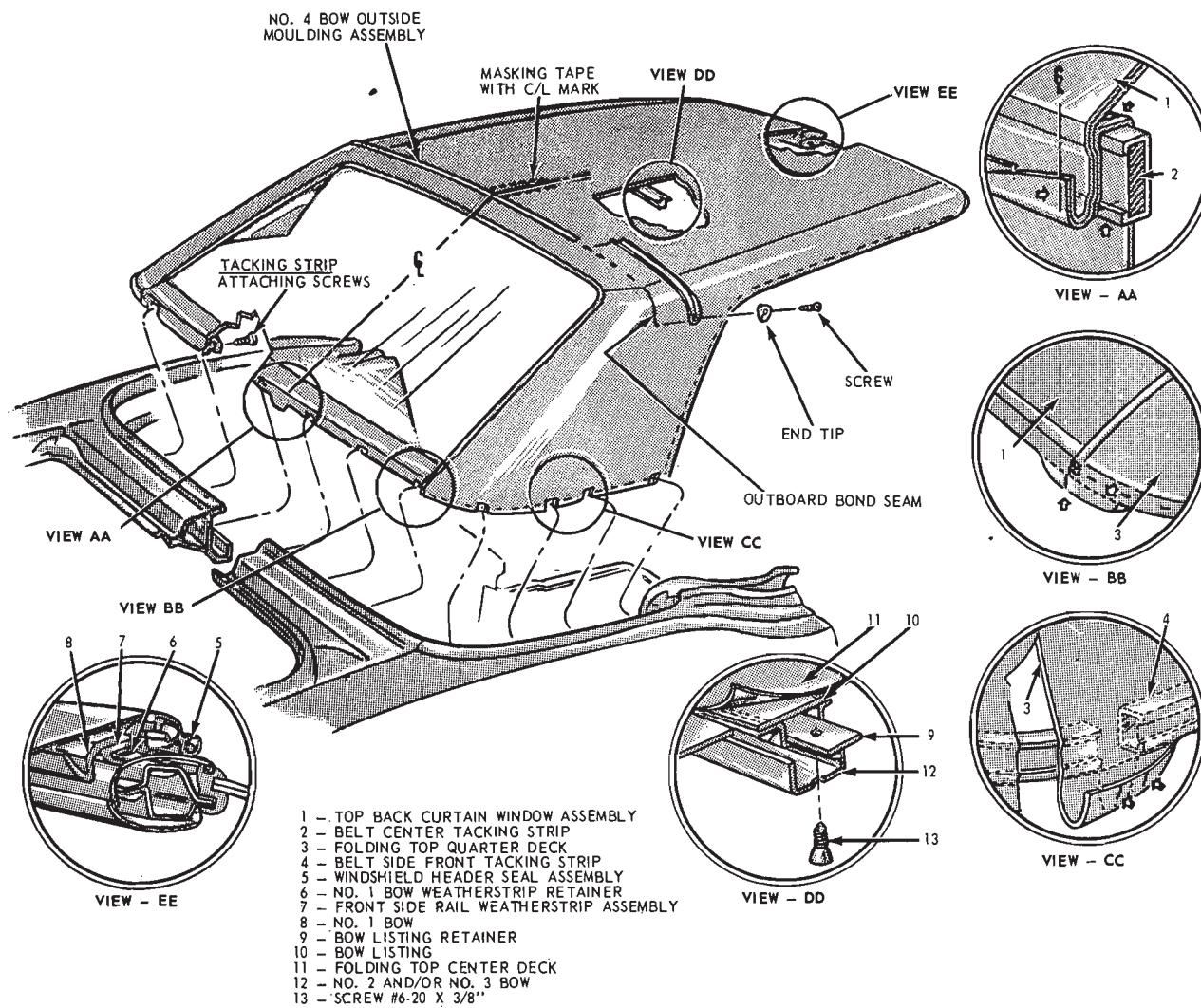
4. Remove the staples retaining the

top deck and quarter assembly to the rear roof bow tacking strip and remove the retainer.

5. Mark the location of the right and left case assembly, and the roof bow, then, remove the staples retaining the right and left case assembly to the rear roof bow.

6. Mark the location of the zipper center at the rear roof bow with tailor's crayon. Then, pull the upper half of the back curtain zipper from the rear roof bow tacking strip.

7. Remove 3 screws retaining the top compartment trim to the belt front side tacking strip on each side. Remove 5 screws retaining the com-



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**FIG. 15—Top Trim Assembly Attachments—Mustang, Cougar**

partment trim to the seat back (Fig. 14). Remove the top compartment trim tension springs.

8. Pull the top compartment trim back and remove 8 bolts retaining the center tacking strip. Mark the zipper end locations on the top material with tailor's crayon.

9. Remove the staples from the webbing and the top quarter from the tacking strip. Remove the back curtain, well liner, and tacking strip as an assembly from the vehicle.

10. Mark the location of the zipper on the back curtain, then, remove the zipper from the back curtain and sew on a new zipper.

11. Locate the center and position the upper half of the back curtain zipper to the center of the rear roof bow tacking strip and staple or tack it se-

curely to the tacking strip.

12. Position the right and left case assemblies to the rear roof bow tacking strip and staple or tack them securely to the tacking strip.

13. Position the top deck and quarter assembly to the rear roof bow tacking strip and staple or tack it securely to the tacking strip, working from the center outward.

14. Staple or tack the rear roof bow retainer securely to the rear roof bow, then, insert the moulding in the retainer.

15. Install the right and left rear roof bow retainer tips (Fig. 15).

16. Position the back curtain in the vehicle and tack the webbing and quarter assembly to the tacking strip.

17. Zip the curtain shut and remove the prop from the top, then,

lock the top to the windshield header.

18. Install the center tacking strip bolts and tighten them until all wrinkles are removed from the back curtain and quarters. Then, install the top compartment trim retaining screws.

#### **CONVERTIBLE TOP FABRIC**

##### **REMOVAL**

1. Protect the painted surfaces of the upper back panel, luggage compartment door and both quarter panels with suitable covers.

2. Fabricate two bow locating gauges to the dimensions shown in Fig. 16.

3. Remove the rear seat cushion and seat back.

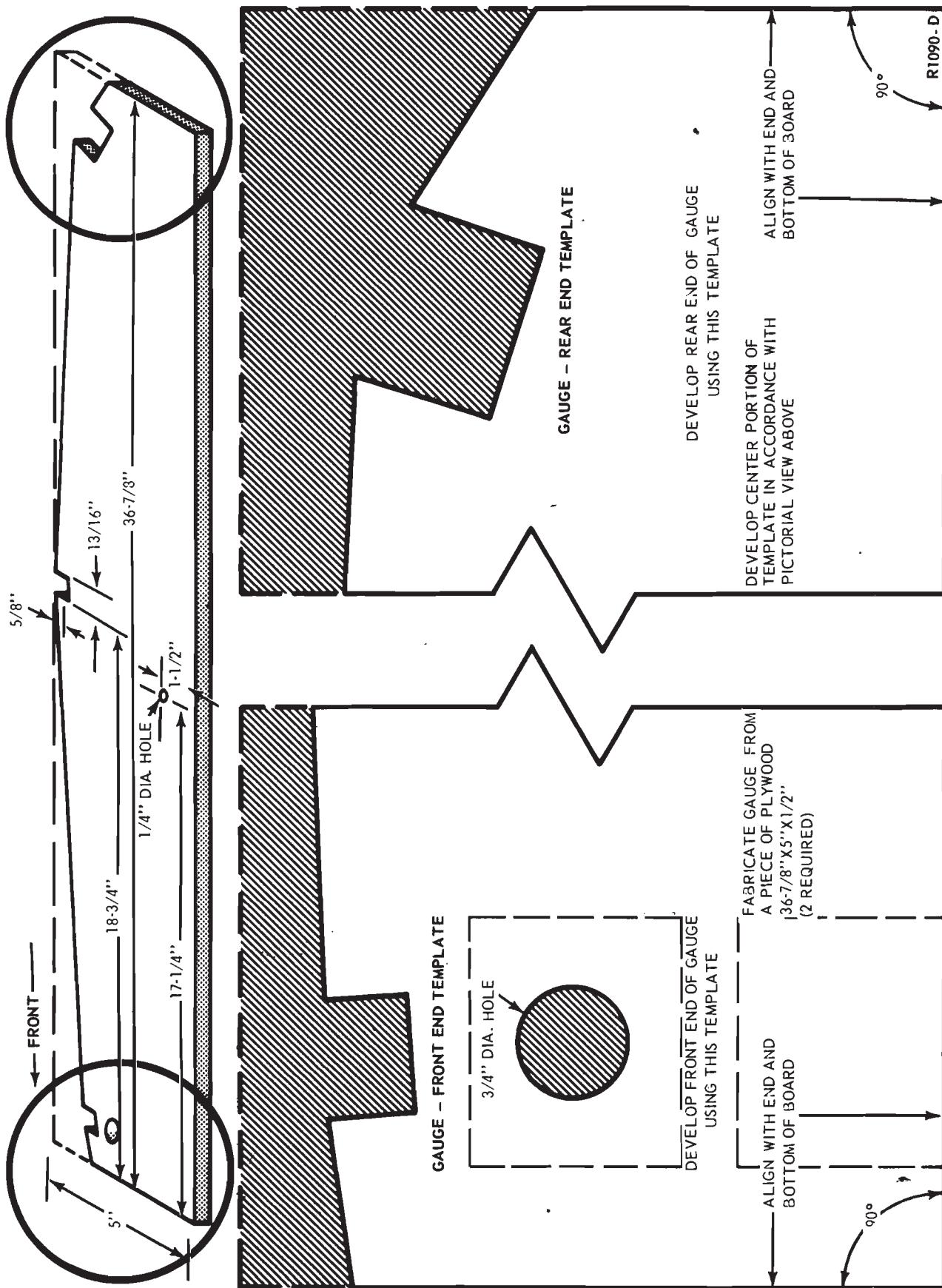
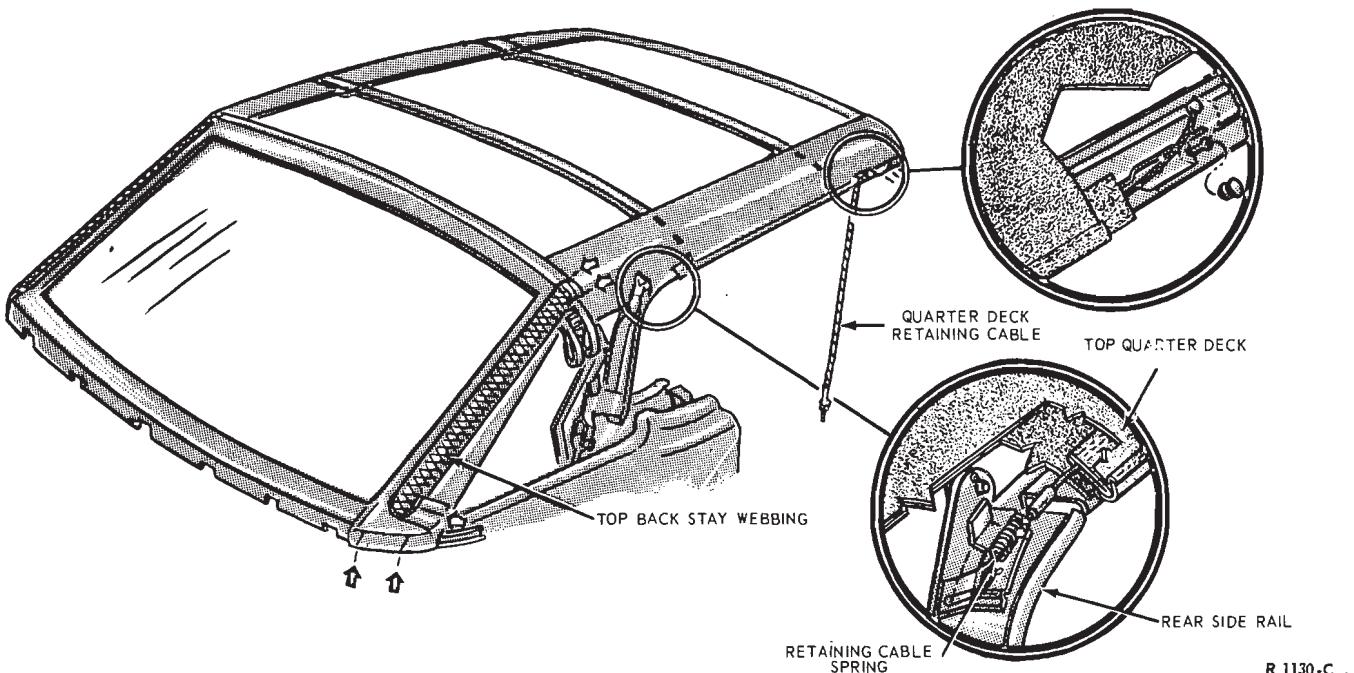


FIG. 16—Bow Locating Gauge Fabrication—Mustang, Cougar



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FIG. 17—Top Stay Pad Webbing and Quarter Deck Retainer Cable Attachments—Mustang, Cougar

4. Remove the top compartment trim side and front attaching screws (Fig. 14).

5. Lower the top and remove the weatherstrip retainer from the No. 1 bow.

6. Remove the front side weatherstrip attaching nuts from both front side rails and remove the weatherstrip assembly (Fig. 15).

7. Remove the windshield header seal assembly and the top material from the No. 1 bow (Fig. 15).

8. Remove the center and rear side rail weatherstrips. Loosen the top quarter material flaps which are cemented to the front and rear side rails (each side).

9. Disengage the top material hold-down cables from the rear side rail attachment and pull the cables forward until each is removed from the retaining sleeve (Fig. 17).

10. Remove each side rail coat hook.

11. Raise the top and clamp the No. 1 bow to the header.

12. Install the two fabricated bow locating gauges (Fig. 16).

13. Remove the No. 2 and No. 3 bow listing retainer screws and remove both retainers from the listings (Fig. 15).

14. Raise the compartment trim up sufficiently to remove all of the tacking strip attaching screws (Fig. 15).

15. Remove the No. 4 bow outside moulding end tips, moulding and moulding retainer (Fig. 15).

16. Detach the top material from the No. 4 bow. Peel the top material back to expose the No. 4 bow and mark the existing top back stay webbing location at the No. 4 bow and the tacking strip (Fig. 17).

17. Detach the upper end of the webbing from the No. 4 bow. Unzip the rear curtain window and remove the soft trim with tacking strips attached. Place the assembly on a bench.

18. Mark the No. 4 bow at both ends of the zipper elastic material and detach the upper half of the zipper assembly from the No. 4 bow.

19. To assure the proper location of the tacking strips in the new top assembly, back curtain window assembly and/or compartment trim assembly, proceed as follows:

a. Locate the center punch mark on the belt center tacking strip retainer (Fig. 15, View A-A). Transpose this center mark to the adjacent rear curtain and compartment trim materials.

b. Mark the rear curtain along the lower edge of the belt center tacking strip (Fig. 15, View BB and CC).

c. Mark the belt center tacking strip to indicate the rear window opening at both sides (Fig. 15, View BB).

d. Mark the top deck quarters along the lower edge and at the ends of each belt side front tacking strip (Fig. 15, View CC).

20. Carefully and without tearing

the material, detach the trim material being replaced from the tacking strips.

21. Trim off the selvage edge of the old top deck quarter and/or back curtain material that extends below the tacking strips. The selvage edge must only be cut from the old parts which are being replaced.

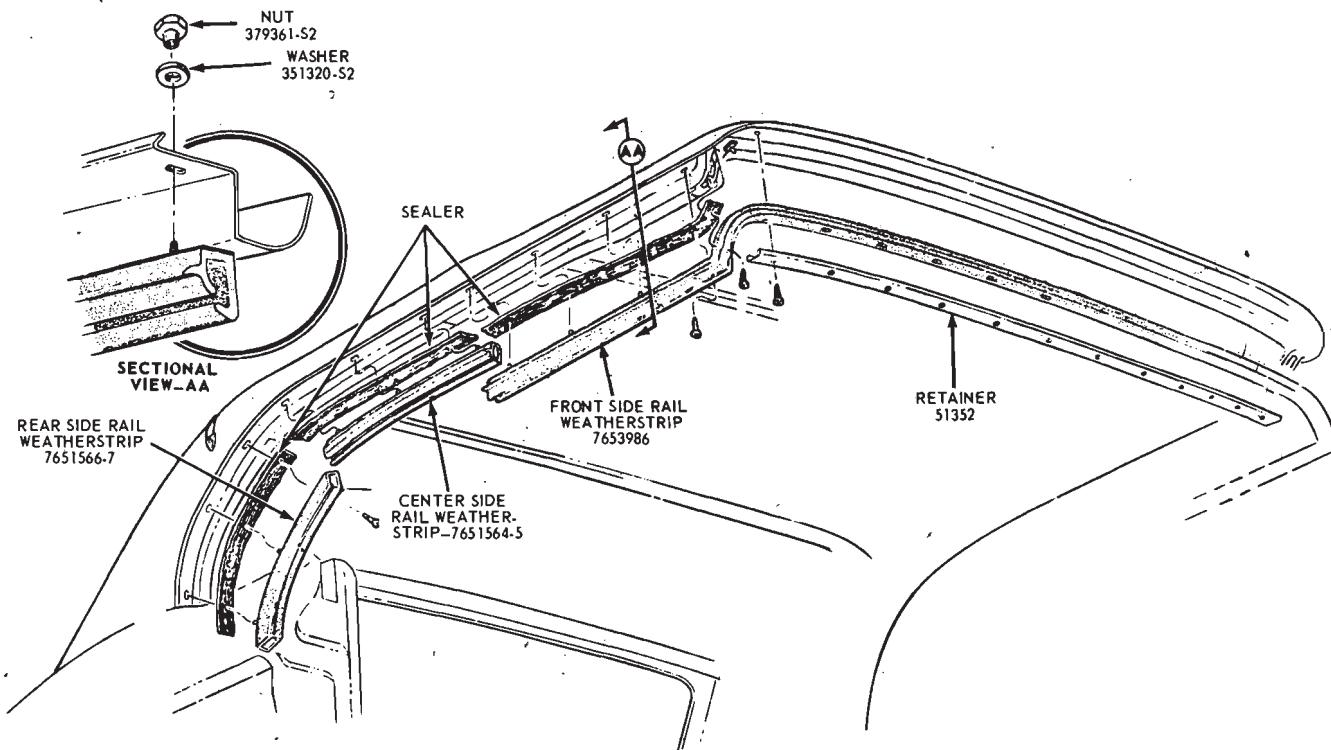
## INSTALLATION

1. Lay the new rear curtain window assembly on a clean bench with the interior surface up. Measure the width and mark the center of the back window at the top, above the zipper, and at the bottom, at the tacking strip area (Fig. 15).

2. Using the old rear curtain window assembly as a template, mark the new curtain to indicate the lower edge of the tacking strip. Also mark the tacking strip attaching hole locations. Carefully remove the old rear curtain window assembly and cut out the tacking strip attaching holes in the new curtain, only.

3. Using the old top assembly as a template, mark the new top quarter deck to indicate the lower edge of the tacking strip. Also mark the tacking strip attaching hole locations. Discard the old top. Cut out the tacking strip holes in each quarter of the new top, only. Do not trim off the selvage edge.

4. Using the old compartment trim as a template, transpose the markings



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FIG. 18.—Side Rail Weatherstrip—Mustang, Cougar

to the new compartment.

5. Align the belt center tacking strip with the compartment trim alignment marks and retain with staples. The edge of the material should be flush with the bottom of the tacking strip.

6. Align the belt center tacking strip with the rear curtain window aligning marks and retain it with staples.

7. Align the belt side front tacking strip with the aligning marks on the top deck quarter (both sides) and retain it with staples.

8. Position each top back stay webbing on the belt center tacking strip and retain it with staples (Fig. 17).

9. Align the top deck quarter to the belt center tacking strip, maintain proper rear curtain opening and retain it with staples (Fig. 15, View BB).

10. Carefully position the upper half of the zipper assembly on the No. 4 bow aligning the bow and material center marks. The edge of the material should be flush with the front edge of the No. 4 bow tacking strip. Working from the center outboard, secure the assembly with staples. Both ends of the elastic strip should correspond with the marks on

the No. 4 bow. Refer to Step 19 under Removal.

11. Position the rear curtain and top assembly on the stack and engage the zipper.

12. Position the top back stay webbing on the No. 4 bow aligning marks and secure it with staples (Fig. 17).

13. Install a piece of masking tape on the underside of the No. 4 bow at the centerline punch mark located in the bow. Mark the tape indicating the centerline.

14. Measure and mark the center between the bond seams of the top center deck at the No. 4 bow on the underside of the material. Install a 6-inch piece of masking tape on the top material inner surface at the centerline of the No. 4 bow. Mark the centerline along the entire length of tape (Refer to Fig. 15).

15. With the bow locating gage in place (refer to Step 13 under Removal and Fig. 16), install the belt center tacking strip attaching screws to approximately  $\frac{1}{4}$  to  $\frac{1}{2}$ -inch from the bottoming out position. Install the belt side front tacking strip attaching screws and tighten to within  $\frac{1}{4}$  to  $\frac{1}{2}$ -inch of bottoming.

16. Center the top material on the No. 4 bow and pull it forward sufficiently to center the outboard bond

seam on the No. 4 bow (Fig. 15). Secure the top material to the No. 4 bow with staples.

17. Install the two retainers in the No. 2 and No. 3 bow listings (Fig. 15).

18. Route the quarter deck retaining cables through the hold down sleeves in the top material and retain each cable at the rear (loosely) with the attaching nut and washer (Fig. 17).

19. Pull the top trim material forward over the No. 1 bow until the No. 2 and No. 3 bow listings (Fig. 15) are centered over their respective bows. While maintaining tension on the top trim, place a pencil mark on the outer surface of the trim material along the forward edge of the No. 1 bow.

20. Remove the two bow aligning gauges and reinstall the coat hooks.

21. Fold the front edge of the top material back from the No. 1 bow. Disengage the No. 1 bow from the windshield header and prop it up about one foot above the header.

22. Apply an ample amount of trim cement C2AZ-19C525-A across the lower front surface of the No. 1 bow including the tacking strip and to the adjacent inner surface of the top material.

23. Lower the No. 1 bow onto the header but do not clamp it. With the top material properly centered on the No. 1 bow, start at the outer front corners and alternately pull the material forward to the pencil aligning mark. Make certain that all wrinkles are removed, and then fold and cement the material to the underside of the bow.

24. Position the windshield header seal assembly (Fig. 15) and secure the seal and top material with staples. Trim off excess top material.

25. Cement the front and rear flaps to each side rail. Pierce holes in the flaps for the weatherstrip attachments.

26. Install the front side rail weatherstrip and the No. 1 bow retainer.

27. Tighten the retainer cable adjustment nut at each rear side rail sufficiently to hold the top material tightly against the rail.

28. Install the intermediate and rear side rail weatherstrips. Adjust as required.

29. With the No. 1 bow clamped to the header, tighten all belt tacking strip attaching screws securely.

30. Install the compartment trim to the belt side front tacking strip with the attaching screws (Fig. 14).

31. Install the compartment trim with the seat back support lower ledge attaching screws (Fig. 14).

32. Install the rear seat back and cushion.

33. Remove the interior centerline tape strips.

34. Install the No. 4 bow outside moulding retainer, insert the moulding and install the two end tips (Fig. 15).

#### ROOF FRONT HEADER WEATHERSTRIP

1. Release the toggle clamps and

partially lower the top.

2. Remove 12 screws attaching the weatherstrip retainer to the header and remove the retainer.

3. Remove 2 screws attaching the weatherstrip to the header at each corner (Fig. 18).

4. Remove 6 nuts and washers (3 each side) retaining the weatherstrip to the roof side rails and remove the weatherstrip.

5. Apply sealer to the header and roof side rails and place the new weatherstrip in position.

6. Install the weatherstrip retainer with 12 screws and the 2 weatherstrip attaching screws at each corner.

7. Install 3 nuts and washers attaching the weatherstrip to each side rail. Trim the weatherstrip for a watertight fit (Fig. 18).

8. Raise the top and lock it to the windshield header.

## PART 45-03 Sun Roof Panel

COMPONENT INDEX Applies to Cougar, Montego, Thunderbird and Continental Mark III Only	All Models Listed	COMPONENT INDEX Applies to Cougar, Montego, Thunderbird and Continental Mark III Only	All Models Listed
ALIGNMENT OF CABLE GUIDES	03-02	MOTOR AND/OR COUPLING REPLACEMENT	03-03
ALIGNMENT OF PANEL IN GUIDES	03-02	OPERATION—ELECTRICAL, MECHANICAL	03-01
DRAIN TUBE MAINTENANCE	03-02	PANEL ALIGNMENT	03-01
DRIVE PINION REPLACEMENT	03-04	REAR SLIDE AND CABLE REPLACEMENT	03-05
GEAR BOX AND DRIVE REPLACEMENT	03-04	SLIDING PANEL REPLACEMENT	03-04
HEADLINING TRIM REPLACEMENT	03-05	WEATHERSTRIP REPLACEMENT	03-06
LUBRICATION	03-02		

A page number indicates that the item is for the vehicle(s) listed at the head of the column.

### 1 DESCRIPTION AND OPERATION

The sun roof panel slides backward and forward on guide rails and is actuated by a two-way electric motor mounted at the center of the windshield header area. The motor, through a drive coupling, turns a drive assembly whose output shaft extends up into the cable drive housing (Figs. 3 and 4). A pinion on the end of the output shaft drives flexible cables which are attached to the sun roof panel.

When the control switch is actuated (to open), the roof panel retracts down and rearward. It moves from the flush roof mounted position on guide rails into a storage space located between the headlining and the stationary roof panel, exposing an

opening over the front seat area.

When the control switch is actuated in the opposite direction the sun roof panel moves forward in the guide rails. Near the end of the forward travel, the rear portion of the roof panel moves upward on two ramps. This action positions the panel flush with the roof and seals it tightly in the roof opening.

#### MANUAL OPERATION

The sun roof panel may be closed manually in case of electrical power failure. Remove the auxiliary drive cover which is located in the middle of the headlining close to the front edge of the roof opening. To remove

the cover, grasp with fingers and pull outward. Then remove the screw which is visible when the cover is removed. Note the number and type of washers which are removed with the screw. The screw and washers provide adjustment for the auxiliary drive clutch.

To close the roof panel, use the crank handle provided in the glove box. Insert the threaded end of the crank handle into the socket in the auxiliary drive. Turn the crank handle clockwise to close the roof.

After performing these operations, remove the crank handle, install the screw with washers, and install the auxiliary drive cover.

### 2 ADJUSTMENTS AND MAINTENANCE

#### PANEL ALIGNMENT FOR FLUSH FIT

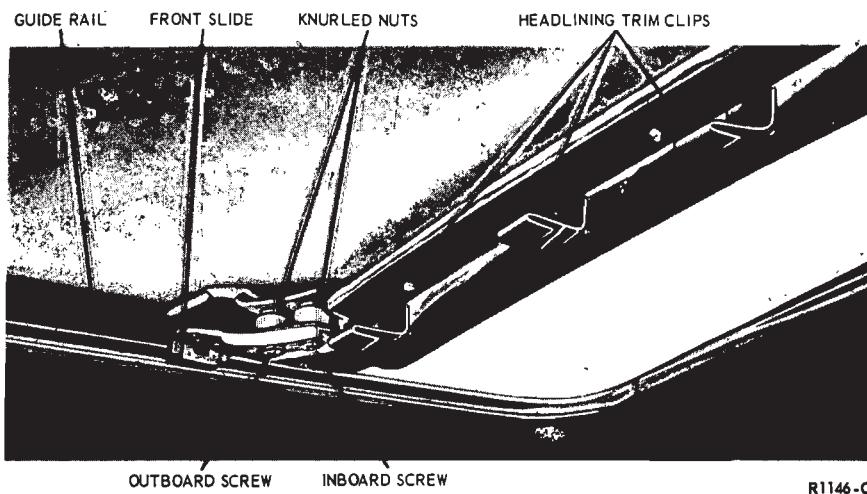
##### FRONT EDGE OF PANEL

To obtain a flush fit on one side of the front of the roof panel with the roof, loosen both front slide screws

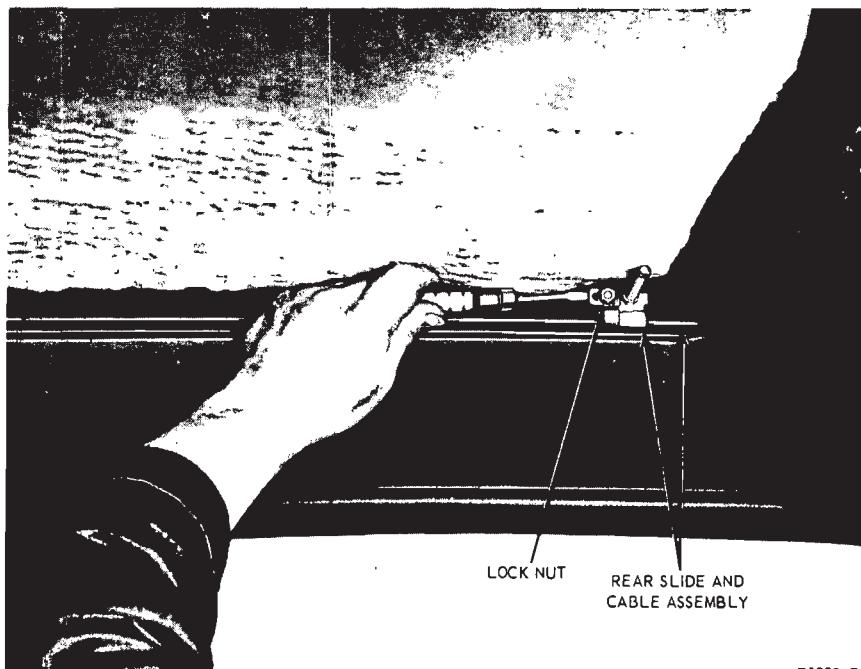
and turn the knurled nuts clockwise to raise the roof panel, and counter-clockwise to lower the panel (Fig. 1). After the desired flushness is obtained, tighten the screws. Adjust the opposite front slide in the same manner, if required.

#### REAR EDGE OF PANEL

To obtain a flush fit on one side of the rear of the roof panel with the roof, loosen the lock nut on the rear slide (Fig. 2). Use an adjustable wrench (metric size-8MM) to loosen the nut. Using a screwdriver, turn the



**FIG. 1—Front Slide Installation and Adjustment**



**FIG. 2—Rear Slide Installation and Adjustment**

adjusting screw clockwise to raise the roof panel or counterclockwise to lower the panel. After desired flushness is obtained, tighten the lock nut. Adjust the opposite rear slide in the same manner, if required.

#### PANEL ALIGNMENT FOR PROPER LIFTING ACTION

If the roof panel does not rise into the roof opening during the closing cycle, open the roof panel to the full rearward position. Examine the ramps

in the drainage channel to determine if they are properly aligned with the lifting elements at the rear of the panel. The point where the lifting element makes contact with the ramp can be clearly seen on the rearward slope of the ramp. Using a screwdriver or similar tool, pry the ramp up and/or move the ramp side to side so that it is centered with the lifting element (Fig. 8). Close the roof panel and note the lifting action of the panel. If necessary, readjust the ramps up or down

and/or side to side until proper lifting action of the roof panel is achieved.

#### ALIGNMENT OF PANEL IN GUIDES

Close the roof panel. Determine which side of the panel jams. Open the roof panel. Remove the drive housing center cover. Pry off the drive cable retaining clip (Fig. 3). To move the right side of the roof panel forward, lift the right cable at the front of the pinion and pull it one or more teeth to the left (Fig. 4). Install the retaining clip and the drive housing cover and check the operation. To move the left side of the roof panel forward, perform the same operation on the left cable. Do not accidentally move the panel while the cable is off the pinion.

#### ALIGNMENT OF CABLE GUIDES

If one side of the roof panel does not raise or if the roof panel jams up during its travel, check both front corner lower elbow guides for alignment with the front and side guides. If necessary, shim the lower elbow guides to move the guides inboard for alignment with adjacent guides (Fig. 3).

#### LUBRICATION

During cable replacement, lubricate the cables with petroleum jelly or vaseline. It is not necessary to lubricate the top surface of the guide rail covers or the slide tracks. Periodically, clean off any residue that may accumulate on the guide rail covers.

#### DRAIN TUBES

During regular maintenance, check to see that the two drainage holes at the front corners of the roof panel frame are open and free of foreign material. If the drains are plugged, they may be cleaned with an air hose (low pressure) or with a flexible wire. If the drain tubes cannot be cleaned in this manner, they must be replaced. The rear drain tubes can be cleaned from the bottom ends also if necessary. When cleaning with an air hose use low air pressure so as not to damage or detach the plastic tubes.

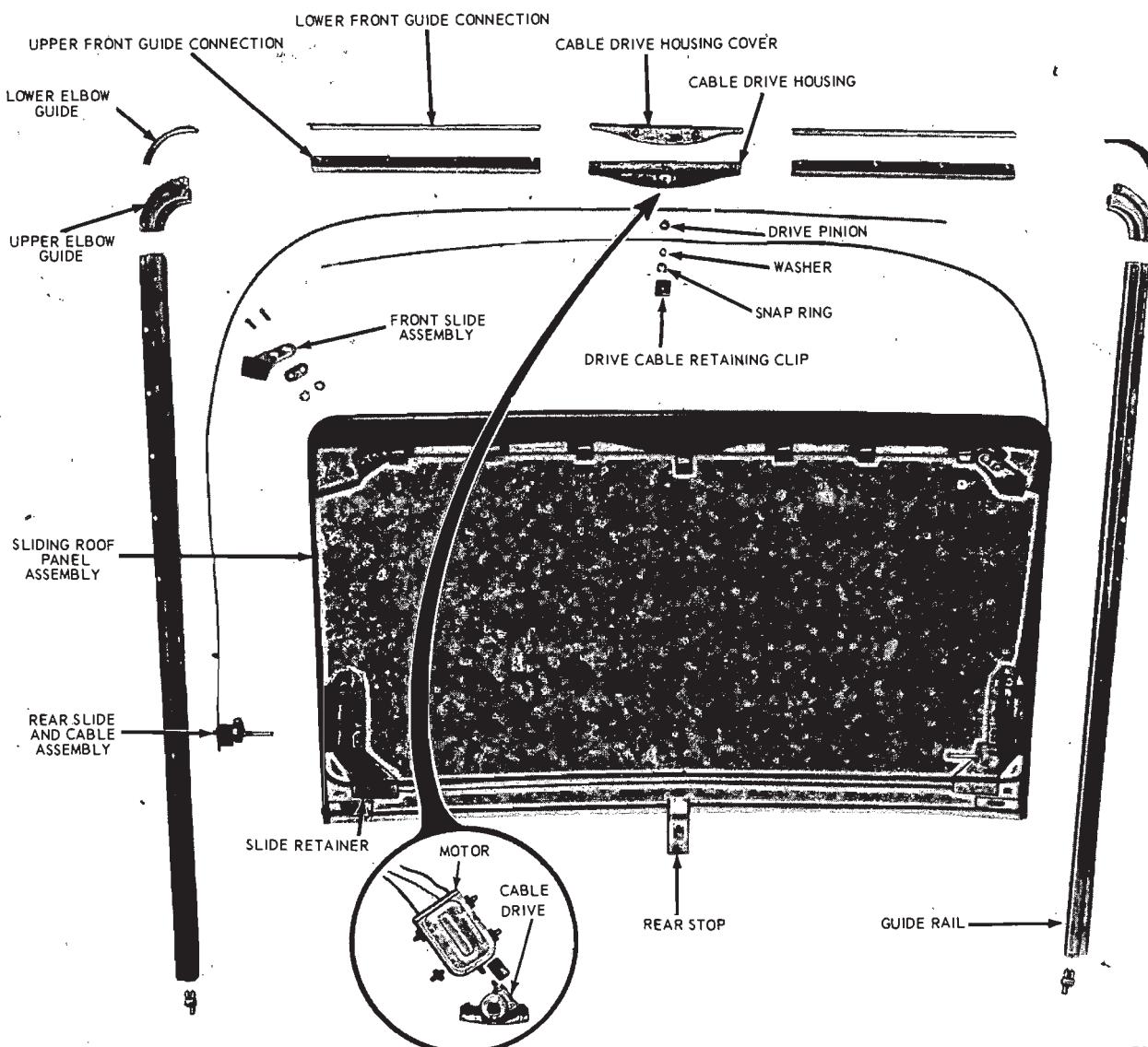


FIG. 3—Sun Roof Sliding Panel—Disassembled View

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### 3 REMOVAL AND INSTALLATION

#### MOTOR AND/OR DRIVE COUPLING

1. Disconnect the battery ground cable.
2. Remove both sun visor assemblies and the sun visor center bracket.
3. On the Thunderbird, remove the control switch from the convenience panel, remove the windshield upper and side garnish mouldings, the right and left side rail garnish mouldings, and the convenience panel from the

stationary front edge of the roof panel.

On the Cougar, remove the windshield side garnish mouldings and the map light and/or convenience panel.

4. Carefully pull down the headlining from behind the windshield weatherstrip in the stationary front roof panel area to gain access to the sliding panel motor and flexible drive coupling.

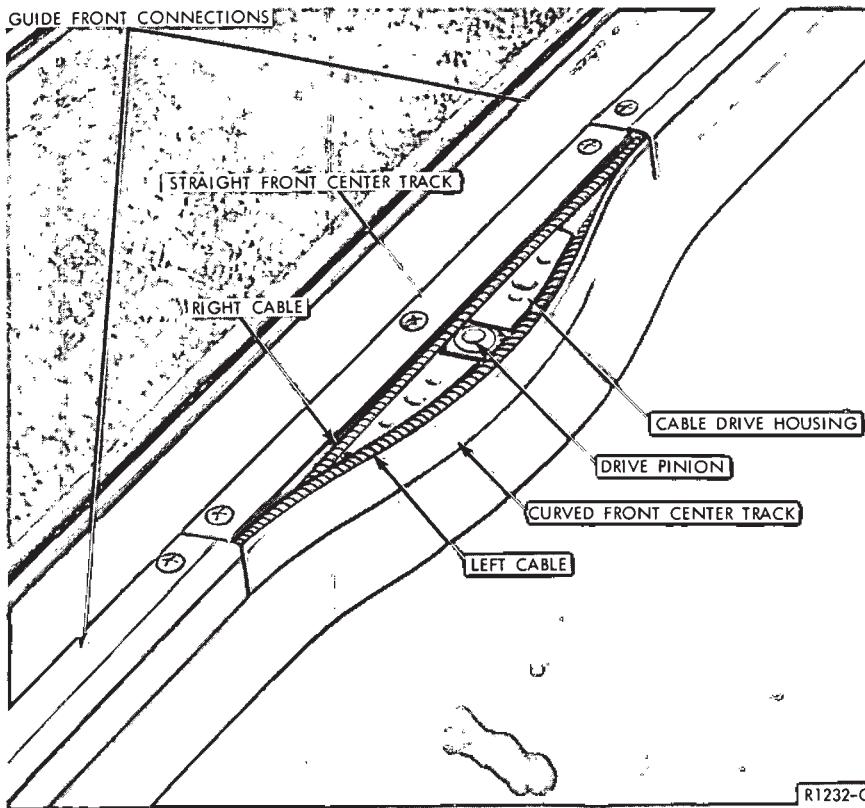
5. Disconnect the two motor wires from the wiring connector and discon-

nect the motor ground wire from the windshield header.

6. Using an adjustable wrench (10MM-metric size), remove the two motor bracket mounting bolts and slide the motor and bracket assembly off the drive coupling.

7. If the drive coupling is being replaced, disconnect the coupling from the gear box and drive assembly and connect a new one in its place.

If the motor is being replaced, slide the motor out of the slots in the



**FIG. 4—Drive Cable and Housing Installation**

mounting bracket and slide a new motor into the mounting bracket slots.

8. Connect the motor shaft to the drive coupling, position the motor and mounting bracket assembly to the front side of the stationary roof panel and secure it with the two mounting bolts.

9. Connect the motor wires and battery and check the operation of the sliding panel.

10. Apply cement to the forward edge of the headlining. Starting at the center, position the headlining to the windshield header. Retain in position with the windshield weatherstrip.

11. Install the map light and/or convenience panel.

12. Install the windshield garnish mouldings.

13. On Thunderbird vehicles, install the roof side rail garnish mouldings and install the control switch in the convenience panel.

14. Install the sun visors and center bracket.

#### **GEAR BOX AND DRIVE ASSEMBLY AND/OR DRIVE PINION**

Slide the sun roof panel back to the

full open position and remove the cable drive housing cover (Fig. 3). Remove the drive cable retaining clip and disengage the drive cables from the pinion (Fig. 4).

If it is necessary to replace only the pinion, remove the snap ring, flat washer and pinion from the shaft and install the new pinion at this point. Secure the new pinion with the flat washer and snap ring; and, then, re-engage the cables to the pinion, and install the retaining clip and the cable drive housing cover.

If the gear box and drive assembly is being removed, first remove both left and right guide front connections and the elbow guides (Fig. 3); and then, remove the straight front center track (three retaining screws) shown in Fig. 4. Removing the straight front center track gives access to the two screws that retain the cable drive housing to the gear box and drive assembly in the stationary front roof panel. Remove these retaining screws and lift the cable drive housing out over the pinion.

The gear box and drive assembly can now be removed from the underside of the stationary front roof panel (Fig. 4). For access to the assembly, remove the headlining from

the stationary front roof panel area and remove the motor as described in steps 1 through 6 of the foregoing procedure.

From the top side of the stationary roof panel at the cable drive housing location, remove the two gear box and drive assembly retaining screws. The assembly can now be removed by lowering it from the underside of the panel.

If the gear box and drive assembly is being replaced, transfer the drive pinion, flat washer and snap ring, and the drive coupling to the new assembly before installation.

#### **SLIDING ROOF PANEL**

##### **REMOVAL**

1. Open the roof panel approximately three inches.

2. Remove two screws securing the headlining trim panel to the sliding roof panel at the front corners.

3. Slide the headlining trim panel forward and out of seven trim retaining clips mounted on the sliding roof panel front edge (Fig. 1). Push the trim panel to the full rearward position.

4. Remove the outboard screw from each front slide assembly, loosen the inboard screws, and rotate both front slide assemblies inboard to clear the guide rail (Fig. 1).

5. Pull the left and right rear slide and cable assemblies out of their respective guide retainer holes at the rear of the panel (Figs. 2 and 3).

6. While lifting the front edge of the roof panel up, operate the switch to move the rear slide and cable assemblies forward on their guide rails approximately one inch; and then, pull the roof panel forward and out of the roof opening.

##### **INSTALLATION**

1. Install the roof panel into the roof opening. Hold the roof panel in a horizontal position so that the stop on the rear edge center does not damage the rear passenger compartment head-lining as the panel goes into place.

2. Swing the left and right front slides out onto their respective guide rail upper tracks. Install the outboard screws and tighten both screws on each front slide (Fig. 1).

3. Push the roof panel to the full forward position by hand.

4. Lift the rear of the roof panel upward and actuate the control switch

so as to bring the rear slides into alignment with the holes on the slide retainers (Figs. 2 and 3).

5. Engage each slide pin into the retainer hole and install the retainer spring plate on the slide.

6. Actuate the switch, check the operation of the roof panel, and note the fit of the panel to the roof.

7. Make any necessary adjustments for panel alignment as outlined in Section 2 of this part.

8. With the sliding roof panel in a partially open position, slide the head-lining trim panel forward of the roof panel and then to the rear until the front edge of the headlining trim panel is engaged in the seven retaining clips mounted on the roof panel. Install two screws to secure the headlining trim panel at each front corner.

9. Close the roof panel assembly.

#### REAR SLIDE AND CABLE ASSEMBLY

If one cable needs replacing, replace both to assure a parallel travel of the roof panel.

#### REMOVAL

1. Remove the sliding roof panel as

described under Removal in the foregoing procedure.

2. Remove the cable drive housing cover at the front center of the roof opening, and remove both upper elbow guides at the front corners (Fig. 3).

3. Using a screwdriver, pry off the drive cable retaining clip. The retainer clip is designed of spring steel. When removing it, hold one hand over the clip to prevent pop-up.

4. From the center opening, pull the free end of one cable out of the guide rail and out of the center opening. Pull the opposite end of the cable with the slide assembly forward to the front corner (Fig. 5). Remove the slide from the guide track and pull the slide and cable out of the guide front connection.

5. Remove the opposite cable in the same manner.

#### INSTALLATION

1. Position the left rear slide on the guide track (Fig. 5) and move the slide and cable assembly back until the slide is on the center line with the 5th side guide rail screw from the front.

2. Slide the free end of the cable into the guide front connection and

route the cable through the curved front center track and into the lower track on the right side. Do not engage the cable in the drive pinion teeth (Fig. 4).

3. Install the right slide and cable assembly in the same manner as the left except that the right cable is routed in the straight center track and into the lower track on the left side (Fig. 4). Make sure that the right slide is centered with the 5th screw from the front on the right guide rail. Do not engage the cable in the drive pinion teeth.

4. Check both front corner lower elbow guides for alignment with the front and side guides. If necessary, shim the lower elbow guide to move the guide inboard for alignment with adjacent guides.

5. Install both front corner upper elbow guides. Recheck the rear slides for center position with the 5th screw from the front on the side guide rails. With the slides in this position engage the cables in the drive pinion teeth. This operation is critical to assure roof panel alignment and preclude cable breakage.

6. Install the drive cable retaining clip. The narrow (notched) edge of the plate is positioned to the front of the vehicle.

7. Install the cable drive housing cover. Start the two attaching screws with the fingers to avoid cross-threading, and then tighten with a screwdriver. Do not overtighten.

8. Actuate the switch to check the cable operation. After checking the cable operation, return the rear slides to the 5th screw from the front of the guide rail location.

9. Install the sliding roof panel as described under Installation in the foregoing procedure.

#### HEADLINING TRIM PANEL

Open the sliding roof panel approximately three inches, and remove the screws that attach the front corners of the headlining trim panel to the sliding roof panel. Slide the headlining trim panel forward and out of the seven trim retaining clips that are mounted on the front edge of the sliding roof panel (Fig. 1). Retract the roof panel assembly to the full open position, and slide the reinforcement bow forward and off the headlining trim material. Grasp the front edge of the headlining trim panel and pull it forward and out of the side guide rail lower tracks.

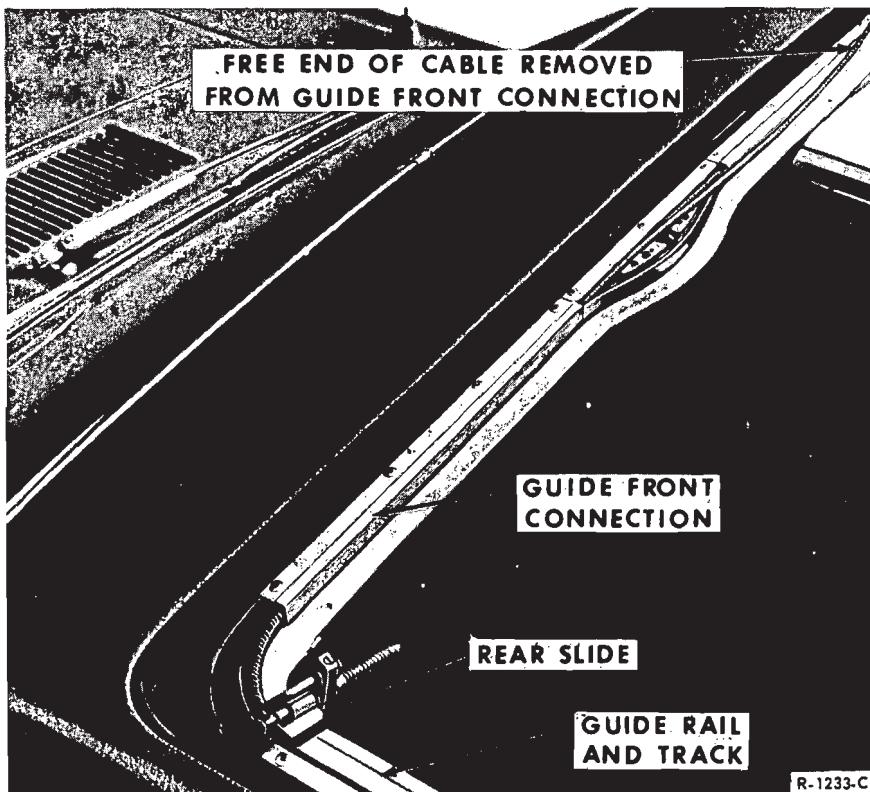


FIG. 5—Removal and Installation of Rear Slide and Cable

**WEATHERSTRIP**

1. With the sun roof panel closed, mark the joint of the roof opening weatherstrip rear edge and the roof panel weatherstrip front edge on the sun roof panel and roof at both sides of the vehicle.
2. Remove the roof panel assembly out of the vehicle as described in this section.
3. Remove the weatherstrips from

the roof panel opening and the rear edge of the roof panel.

4. Clean the surfaces using a suitable cement solvent.

5. Apply weatherstrip cement to both surfaces.

6. Position the roof opening weatherstrip slightly below flush of the roof and align one end of the weatherstrip with a mark on the roof assembly. Cement the weatherstrip to the roof opening.

7. Install the weatherstrip on the rear edge of the roof panel in the same manner, by aligning one end of the weatherstrip with the mark on the roof panel and positioning the weatherstrip slightly below flush of the roof panel. Cement the weatherstrip to the rear edge of the roof panel.

Install the roof panel assembly into the roof opening as described in this section.

**4 DIAGNOSIS AND TESTING**

For detailed diagnosis procedures, refer to the Car Diagnosis Manual, Form FD7962.

**SUN ROOF TROUBLE DIAGNOSIS GUIDE**

TO AVOID UNNECESSARY WORK CHECK THE CAUSES OF THE COMPLAINT IN THE ORDER LISTED		
MOTOR FAILS TO RUN	Verify the complaint 1. Open Circuit Breaker. 2. Broken wires or loose connections up to control switch.	3. Lack of continuity through control switch to motor (Fig. 6). 4. Broken wires or loose connections to motor or poor motor ground connection. 5. Inoperative motor.
MOTOR RUNS BUT PANEL JAMS OR FAILS TO RISE	Verify the complaint 1. The slipping clutch in the auxiliary drive assembly engages too easily. 2. Ramps out of alignment with lifting elements. (See Panel Alignment for Proper Lifting Action, page 02 and Fig. 8). 3. Panel misalignment due to front slides being tilted. (See Panel Alignment for Flush Fit on page 01. Follow procedure under Front Edge of Panel).	4. The joints of the cable slides are out of alignment (guide rails, elbow guides and front connector guides) and are jamming the cable drive. 5. Panel does not run true (one side jams). (See Alignment of Panel in Guides on page 02).

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**SWITCH TEST**

Use an ohmmeter or self powered test light. Remove the switch from the vehicle. With the switch operated in one direction, there will be continuity between terminals B and C and between E and F (Fig. 6). With the switch operated in the other direction, there will be continuity between terminals A and B and between D and E (Fig. 6).

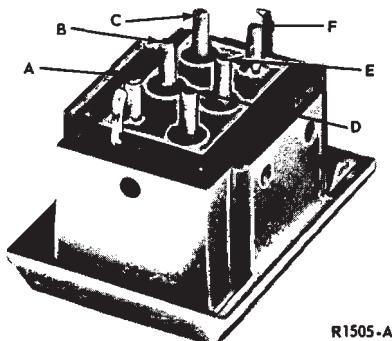


FIG. 6—Switch Terminals

**CHECKING AND ADJUSTING THE SLIPPING CLUTCH**

If the motor spins and the panel fails to close completely, the slipping clutch in the auxiliary drive requires adjustment. Remove the auxiliary drive cover and, with the screwdriver on the end of the manual operating handle (supplied in glove box), tighten the clutch adjusting screw (Fig. 7). If tightening the adjusting screw does not eliminate the trouble, remove the screw and add washer(s) (supplied with the manual operating handle in glove box) as necessary (Fig. 7). Be sure that the screw is tight after installing the washers.

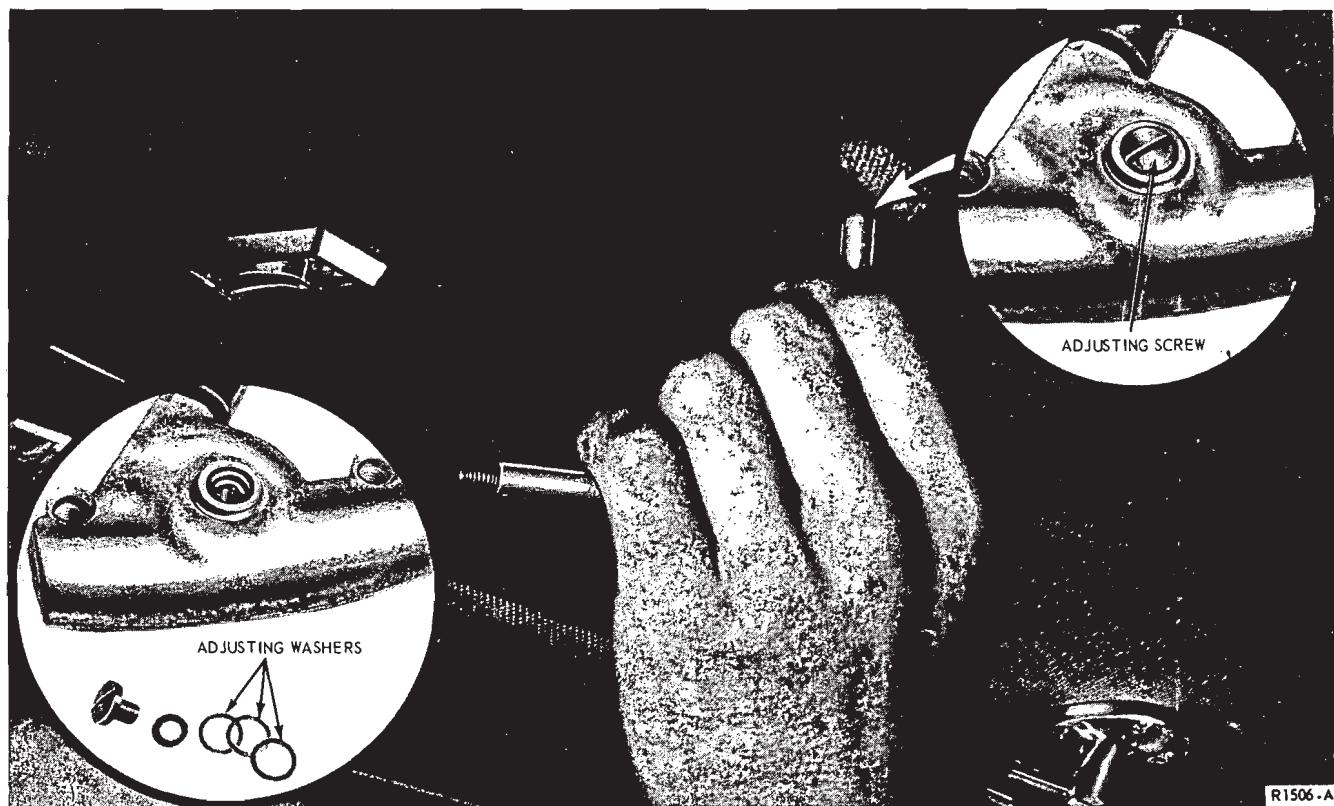


FIG. 7—Auxiliary Drive Slipping Clutch Adjustment

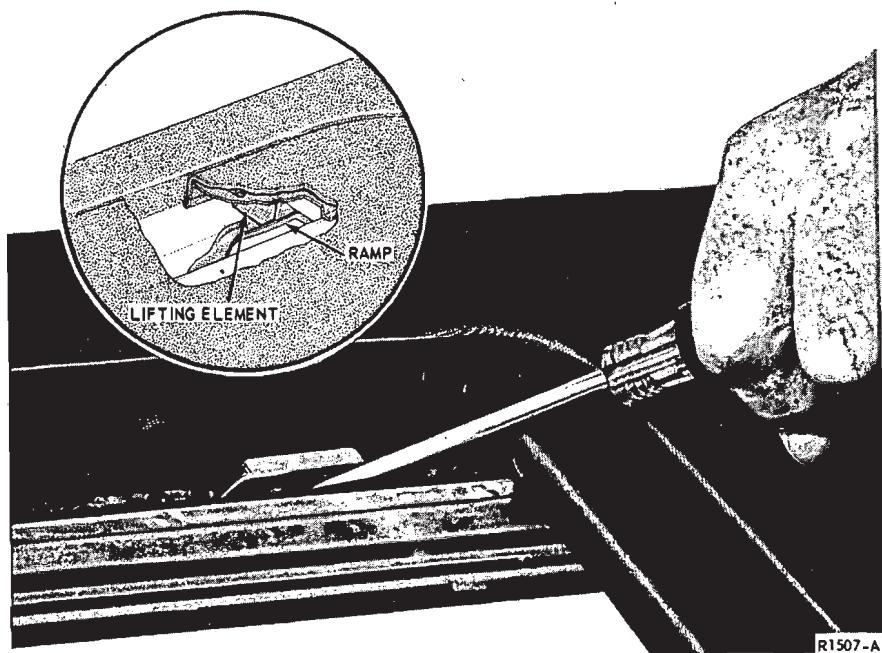


FIG. 8—Alignment of Ramps With Lifting Elements